The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 118, NO. 15 — COPYRIGHT, 1942, BY AMERICAN MEDICAL ASSOCIATION CHICAGO, ILLINOIS — APRIL 11, 1942

SURGICAL ASPECTS OF ACUTE PANCREATITIS

WITH SPECIAL REFERENCE TO ITS FREQUENCY AS REVEALED BY THE SERUM AMYLASE TEST

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Acute pancreatitis is certainly a dramatic and interesting disease, yet it is often dismissed as unimportant by most physicians because they consider it as extremely rare and usually fatal. In direct contrast to this impression I expect to demonstrate that acute pancreatitis is far from rare and that in its common form it is rarely fatal but subsides spontaneously. The supposed rarity of acute pancreatitis is due to the fact that it is nearly always unrecognized because it mimics other well known acute conditions, both surgical and medical. In many instances the severe pain in the upper part of the abdomen, nausea and vomiting, local tenderness and muscle spasm all point to what is often called a surgical emergency. Indeed the indications for immediate laparotomy seem so clear that many patients with acute pancreatitis are operated on without any suspicion of the real cause of the trouble; the usual tentative diagnoses are perforated peptic ulcer, acute cholecystitis, intestinal strangulation or acute appendicitis. The diagnostic error is first apparent when the expected lesion is not found; however, if the surgeon is persistent and explores the abdomen, the true state of affairs will usually be revealed. Clear or brownish fluid may be seen coming from the lesser peritoneal cavity, and the pancreas, if it is palpated, will feel enlarged and firm, especially at the head of the gland. If the organ is exposed for inspection it will be found to be edematous, usually a little whiter than normal, and may exhibit tiny areas of fat necrosis over its surface. Occasionally, however, the color is darker, as if suffused with blood. Only in the severe type (called acute necrosis of the pancreas), which fortunately is rare, is there hemorrhagic fluid in the abdominal cavity as well as widespread fat necrosis. This experience with acute pancreatitis is common with most surgeons. As expressed by Finney [1] at the Union Memorial Hospital in Baltimore, where 21 patients with acute pancreatitis were operated on, "At most we have diagnosed 2 correctly from a clinical standpoint and I am not sure about them."

Acute pancreatitis occurs also without raising the question of an acute surgical emergency, because it may simulate purely medical diseases commonly seen by internists. In such cases the presumptive diagnosis is usually acute coronary disease, biliary colic or occasionally tabetic crisis. The fact that the attack subsides promptly often serves to remove the need for any further diagnostic procedures and lulls the physician into a false sense of security that the first impression was correct. It is true that if biliary colic is suspected the diagnosis of cholecystitis is often confirmed when subsequent studies show that the gallbladder is diseased and cholecystectomy advised. Unfortunately, the diagnostic error in many such cases confronts the physician only after cholecystectomy has been performed and the patient returns with recurrent attacks of similar nature occurring within a few weeks or months after operation. Now the surgeon may take the blame for the recurrent attacks, especially if stones were present in the gallbladder, by confessing to the possibility of having missed a stone in the common duct. He may even cheerfully offer to operate again and look for the stone. If he does not find a stone, a T tube is usually inserted in the common duct and the diagnosis in the file of the patient's history becomes "postcholecystectomy syndrome."

Up until a decade ago there was no reasonably certain way of making a clinical diagnosis of acute pancreatitis, and this is, of course, the reason it was seldom recognized and therefore considered rare. Indeed, our sole knowledge of acute disease of the pancreas was furnished by pathologists and to a lesser extent by surgeons. The best known type of acute pancreatitis, acute necrosis of the pancreas or acute hemorrhagic pancreatitis was summarized by Reginald Fitz [2] on the basis of autopsy findings in his classic papers published in 1889; he described and classified the various lesions which are included under these terms. Surgeons also encountered this lesion and soon recognized its severity and the high mortality that followed operation. However, the usually fatal type of disease which Fitz described was extremely rare and for this reason aroused little clinical interest. I shall have relatively little to say, therefore, of acute pancreatic necrosis, but more of the subsiding or transient type of acute (nonhemorrhagic) pancreatitis which is common and rarely fatal.

In 1927 I became interested in the pancreas and largely for diagnostic reasons studied in the serum the pancreatic ferment amylase by a viscosimetric method. My first patient who presented a high serum amylase (thirty times normal) was the mother of a colleague, who had an attack of severe abdominal pain and circulatory collapse, which ended fatally within twenty-four hours; at autopsy there was an intense

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Max Ballin Lecture, delivered at the Institute of Art, Detroit, Nov. 26, 1941.

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1. Finney, G. G., in discussion of paper by Morton, J. J., Jr., and Widger, S. W.: Ann. Surg. **111**: 862 (May) 1940.

2. Fitz, R. H.: Acute Pancreatitis, Boston & M. S. J. **120**: 818, 205 and 229, 1889.

acute hemorrhagic pancreatitis. Other patients were encountered with a high serum amylase, three of whom were later shown to harbor pancreatic cysts, although the values were not as high.[3] Soon afterward I operated on a patient with supposed biliary colic whose serum amylase was extremely high (twenty times normal). At operation I found gross evidence of acute pancreatitis; biopsy of the pancreas showed interstitial changes of acute inflammation. On consulting the literature I was able to find, without much difficulty, nearly 40 cases of acute nonhemorrhagic pancreatitis, nearly all encountered more or less accidentally by surgeons while operating on patients with acute disease of the abdomen, supposedly due to other lesions.[4] The first reference I could find of acute pancreatitis without necrosis was to a patient operated on by Dr. W. S. Halsted[5] in 1890. The preoperative diagnosis was intestinal obstruction; nothing was done at operation and the patient recovered. In 1922 Zoepffel,[6] a German surgeon, operated on 4 patients because of acute manifestations within the abdomen and found changes in the pancreas which were quite unexpected. Zoepffel called the lesion acute edematous pancreatitis because he observed the extreme edema surrounding the gland. All 4 of his patients recovered, although nothing specially was done at operation to the pancreas except to take a specimen for biopsy.

Armed with a simplified method[7] of determining amylase and convinced of the frequency of nonhemorrhagic pancreatitis, I became suspicious of all patients entering the hospital for emergency treatment of acute pain in the upper part of the abdomen; blood was examined for its content of amylase in a series of such patients. Many of them showed high amylase values; at first I operated on these patients and found the changes in the pancreas already noted. It soon became apparent, however, that the attacks, dramatic as they seemed on entrance, rapidly subsided, and often in twelve hours the patient seemed entirely well in contrast to the dire situation the night before.

During the past ten years many more similar observations were made at the Barnes Hospital and St. Louis City Hospital, details of which may be found in several publications during this time.[8] With the use of serum amylase determinations at Barnes Hospital, the number of diagnoses of acute pancreatitis has increased by several hundred per cent. At the St. Louis City Hospital 65 cases were recognized during the past five years, whereas before the use of the amylase test such a diagnosis appeared only a few times a year and then nearly always it was based on observations made at autopsy. Indeed, the incidence of acute pancreatitis was about half of that of perforated peptic ulcer and one tenth of that of acute appendicitis at the latter hospital. Similar observations have been made in other clinics. This situation is not surprising when one realizes that the clinical picture of acute pancreatitis mimics so closely other acute conditions of the abdomen that often the diagnosis cannot be made without the aid of the blood amylase test. The following is a typical recent experience:

A salesman aged 31, unmarried, was admitted because of an emergency with the history that thirty hours before his entrance he was seized with sudden, constant epigastric pain with no radiation and that he had vomited on several occasions after onset of the pain. Previous to this seizure he had been relatively well, except that for the past five months he had suffered from similar but milder episodes of pain lasting several days, with complete freedom of symptoms between attacks. He received some relief by taking sodium bicarbonate and occasionally by consuming food. Several physicians who examined him stated that he had a duodenal ulcer. On admission the patient was severely prostrated but was not in shock and complained bitterly of pain in the midepigastrium. Although a roentgenographic examination did not show air under the diaphragm, the local signs (severe local tenderness and muscle spasm) were so characteristic of peritoneal irritation that it seemed certain that he had either an acute cholecystic obstruction or a perforated peptic ulcer. Because of the possibility of pancreatitis the amylase in the blood was determined. Nevertheless, the patient was prepared for operation; however, promptly after the administration of fluid there was almost a complete relief of pain. Moreover, the local conditions subsided so rapidly that operation was not carried out. This decision was made easy by the fact that the blood amylase examination was reported as 1,500, the normal being about 100. Several days later the blood amylase had returned to a normal value. In view of his past history a complete gastrointestinal series was done. No evidence of ulceration or other abnormality was found. The cholecystogram was of great interest and showed merely a faintly but very definitely visualized gallbladder. The patient was discharged from the hospital and on a dietary regimen has thus far remained well.

This experience is an instructive one because it emphasizes again the fact that it is easy to overlook the possibility of acute pancreatitis and illustrates, therefore, the ease with which such a diagnosis may be missed and an unnecessary operation carried out. It may be missed because the blood amylase test is really the only certain method of diagnosis. May I also emphasize that it is of value only during the acute manifestations. If we had waited a day or two before examining this patient's blood the value for the amylase would have been normal and we never would have known that he actually was suffering from pancreatitis unless, of course, we had operated and found the lesion. The curve of amylase is usually a characteristic one, high at the beginning of the attack but falling very rapidly to normal, as has been illustrated in many publications both from our clinic and elsewhere. Nevertheless, the question is often raised and I must emphasize again that in the typical case serum amylase measurements are of no value whatever unless carried out shortly after the patient's acute symptoms begin. This is particularly true, of course, when the attack is relatively mild in its severity, because in these instances the elevation of the serum amylase, though striking and pronounced, may be of only twelve to twenty-four hours' duration.

Is there actually any sound clinical basis for a bedside diagnosis of acute pancreatitis? I am afraid that I must answer this question in the negative. In spite of my own observations of a good many cases over many years, I believe that such a clinical diagnosis is often impossible. Indeed, one must consider such a diagnosis in every patient with acute pain in the upper part of the abdomen, even though he seems to be presenting the typical clinical picture of the following con-

3. Elman, Robert: Blood Amylase in Pancreatic Disease, Proc. Soc. Exper. Biol. & Med. **25**: 173, 1927. Elman, Robert; Arneson, Norman, and Graham, E. A.: Value of Blood Amylase Estimations in the Diagnosis of Pancreatic Disease: A Clinical Study, Arch. Surg. **19**: 943 (Dec., pt. 1) 1929. Elman, Robert: Blood Amylase in Relation to Disease of the Pancreas; Further Observations, Arch. Int. Med. **48**: 828 (Nov., pt. 1) 1931.

4. Elman, Robert: Acute Interstitial Pancreatitis, Surg., Gynec. & Obst. **57**: 291 (Sept.) 1933.

5. Halsted, W. S.: Retrojection of Bile as a Cause of Acute Hemorrhagic Pancreatitis, Bull. Johns Hopkins Hosp. **12**: 179, 1901.

6. Zoepffel, H.: Deutsche Ztschr. f. Chir. **175**: 301, 1922.

7. Somogyi, M.: J. Biol. Chem. **125**: 399 (Sept.) 1938. Elman, Robert: S. Clin. North America **20**: 1247 (Oct.) 1940.

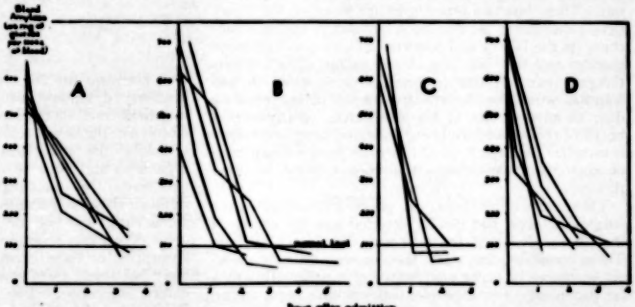
8. Elman, Robert: Acute Inflammation of the Pancreas: A Cause of Epigastric Pain in Gallbladder Disease and of Recurrent Pain After Cholecystectomy, Surg., Gynec. & Obst. **61**: 670 (Nov.) 1935; Variations of Blood Amylase During Acute Transient Disease of the Pancreas, Ann. Surg. **105**: 379 (March) 1937; Diagnosis and Treatment of Acute Nonhemorrhagic Pancreatitis, Am. J. Digest. Dis. **4**: 732 (Jan.) 1938.

ditions: perforation of a peptic ulcer; acute intestinal obstruction; acute cholecystic obstruction or acute cholecystitis; coronary disease; biliary colic; acute appendicitis; tabetic crisis. Indeed, I may say that any patient with severe, pronounced abdominal pain, particularly when it is located in the epigastrium, should be suspected of having acute pancreatitis. If the blood is examined promptly in such cases, many cases of acute pancreatitis will be detected; certainly the test will enable one either to make such a diagnosis or to exclude it. Obviously, the last result is most frequent, and one is thus enabled to exclude the diagnosis of acute pancreatitis and consider other possibilities. On the other hand, a positive test will lead to a diagnosis of acute pancreatitis and thus exclude other lesions for which an immediate abdominal operation might have been carried out; this is especially important because a diagnosis of acute pancreatitis does not call for immediate operation.

TREATMENT OF ACUTE PANCREATITIS

Once a diagnosis of acute pancreatitis is made at the time of the acute attack, the surgeon must then decide whether the patient is suffering from acute nonhemorrhagic pancreatitis or whether the lesion is a true necrosis of the pancreas. Since operation is not urgent, the patient can safely be observed. If the patient has acute nonhemorrhagic pancreatitis, the attack will subside promptly and further examinations can be carried out later. On the other hand, if the patient is suffering from a true necrosis of the pancreas, the attack will not subside and prolonged nonoperative therapy may end in a fatality. It is in the latter group of patients, fortunately very rare, on whom I believe operation should be carried out at an appropriate time, because without operation the mortality approaches 100 per cent. It is difficult to state what this appropriate time will be, but certainly sufficient time must be allowed for adequate preparation of the patient, perhaps for at least several days. Only rarely is it possible for an acute necrotic process in the center of the abdominal cavity to be relieved spontaneously, usually by sloughing of the necrotic organ or drainage of an abscess into the lumen of the intestine or to the exterior. At operation the lesion must be attacked at its origin; the surgeon opens the lesser peritoneal sac and allows escape of infected and necrotic material to the outside by drainage of this cavity. Drainage of secondary abscesses, which usually develop by extension from the lesser peritoneal cavities, is usually insufficient. Cholecystostomy is also advisable in these patients in order to divert the flow of bile which seems to be a factor in the development of pancreatitis by reflux into the pancreatic duct. Many years ago I operated on several such patients who survived and are living today. I must confess that during the past few years, influenced largely by the popularity of the so-called conservative treatment of all types of pancreatitis, we have refrained from operating on these patients. As a result, I have seen 6 such patients during the past five years at the autopsy table. Some of them, I am sure, might have been saved if they had been operated on, since they were in the hospital for several weeks before the fatal outcome. It is well to emphasize also that in patients with hemorrhagic as well as in those with nonhemorrhagic pancreatitis the blood amylase tends to fall after the initial rise. The fall in the former case, however, is not due to a subsidence of the process of inflammation but rather to a destruction of the gland which manufactures amylase. A fall in the level of blood amylase, therefore, must not be taken as an indication that the process is subsiding. This decision must be based on the clinical manifestations.

What is done when the attack of acute nonhemorrhagic pancreatitis has subsided and the patient after the course of a day or two or more feels perfectly well? It has been our policy to study these patients at leisure, usually by carrying out a complete gastrointestinal examination as well as a cholecystogram. If, as the result of such examinations, an operation is indicated (usually cholecystectomy), it is carried out. In many of these cases removal of a diseased gallbladder and stones will result in a complete relief of further attacks. In certain cases cholecystectomy is followed by a recurrence of the attacks of pancreatitis. This experience has stimulated attempts on the part of surgeons to do something at the time of operation which might prevent these recurrences. Indeed, this problem also arises when a patient who has had a previous cholecystectomy returns with recurrent attacks of pain which for the first time are shown to be due to acute pancreatitis. The same problem is presented by the patient with repeated attacks of acute pancreatitis who shows no evidence of a surgical lesion for which an abdominal operation is indicated. The problem, though difficult, is usually hopeful because there seems to be a natural tendency for the attacks to disappear eventually. I wish to make several suggestions which I have found are useful. In the first place, glyceryl trinitrate, $\frac{1}{100}$ grain (0.0006 Gm.), placed under the tongue and repeated in a few minutes shortly after the onset of the attack will often result in dramatic abortion of the attack. This remedy, however, must be used promptly; if the attack has been present for a number of hours the drug usually fails. For this reason, the patient is asked to carry a number of these tablets to be taken as soon as the attack begins. The mere possession of these tablets, once they have effected relief of the pain, often gives the



Characteristic serum amylase curves in four groups of patients with acute interstitial pancreatitis: *A*, with normal gallbladder; *B*, with pathologic gallbladder; *C*, following cholecystectomy; *D*, with condition of gallbladder unknown.

individual a great deal of confidence; that the fear of attacks may thereby be overcome has perhaps in itself some therapeutic value. Other drugs have been recommended for the relief of pain during the attacks. However, most of them are apt to be disappointing. This is true of morphine as well as epinephrine and ephedrine.

The patient who has had several attacks of acute pancreatitis should also be placed on a regimen which has as its purpose the maintenance of a more or less constant flow of bile and the avoidance of any storage of bile for long periods of time in the gallbladder. This may be achieved by a regimen of small frequent feedings and the avoidance of any large meals with necessarily long periods afterward when no food is ingested. In this way many patients may enjoy long remissions.

In the really refractory cases of acute pancreatitis, particularly those in which a previous cholecystectomy has been performed, the problem is more difficult. Many of these patients have had various procedures performed, such as a T tube drainage of the common duct, in an attempt to prevent such attacks. Dilation of the sphincter of Oddi has been advised and performed. Cutting of the sphincter has also been carried out. These last two procedures are based on the theory that pancreatitis is due to a sphincter spasm which converts the biliary and pancreatic ducts into a common channel and that bile acts as an irritant when it enters the pancreas. If this is indeed true, a more obvious solution would be the transplantation of the common duct to another site in the duodenum. I have never heard of this procedure being done and have never done it myself. Perhaps it should be done in refractory cases of acute pancreatitis which do not respond to other therapy.

There are other types of pancreatitis which have surgical interest and can be detected and the course of the disease followed by measuring the blood amylase. These conditions are much less common than the clear-cut instances of acute nonhemorrhagic pancreatitis thus far discussed. For example, patients have been studied with evidence of subacute pancreatitis which follow an atypical course. In other patients a peptic ulcer may slowly perforate into the pancreas and produce an inflammatory reaction reflected in elevations of the blood amylase. Such cases require further study; I have seen very few of them. There is a suggestion which I should like to make, however, in regard to the early diagnosis of carcinoma of the head of the pancreas. Having observed several jaundiced patients with increased blood amylase values who subsequently were shown to have carcinoma, I suggest the more frequent use of this test early in the course of unexplained jaundice. If the tumor obstructs the pancreatic duct, the rise in blood amylase will be prompt; however, with complete obstruction a return to normal occurs within a few weeks. Indeed, in nearly all late cases of carcinoma of the head of the pancreas that I have studied the blood amylase was normal or below normal.

SUMMARY

Physicians are urged always to consider the pancreas as a cause of severe pain in the upper part of the abdomen. The frequency of acute pancreatitis is not generally realized because this disease so mimics other acute conditions that a clinical diagnosis can seldom be made without the serum amylase test, which reveals a high value soon after the onset of the attack. The clinical manifestations of acute pancreatitis are usually those of an acute surgical condition within the abdomen such as perforated peptic ulcer, acute intestinal obstruction, acute cholecystitis and acute appendicitis, so that often emergency operations are needlessly performed. In other instances acute pancreatitis masquerades as a coronary attack or biliary colic and is a cause of the "postcholecystectomy" syndrome. Treatment is conservative at the outset of the attack; if the manifestations subside promptly, as they usually do, subsequent study may reveal the need for operation, usually cholecystectomy; if the manifestations do not subside, necrosis of the pancreas (a rare event) is suspected and operation planned for drainage of the lesser peritoneal cavity. The treatment and prevention of the individual attacks of acute nonhemorrhagic pancreatitis thus far is purely medical.

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THE USE OF SULFAGUANIDINE IN THE TREATMENT OF DYSENTERY CARRIERS

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A chemical for the treatment of infections, such as bacilliary dysentery, which are limited to the gastrointestinal tract should have certain properties. It must dissolve in the bowel content in a concentration adequate to inhibit the multiplication of, or to kill, pathogenic organisms and must be harmless to the human or animal host. No intestinal antiseptic has, in the past, fulfilled these requirements. The use of the sulfonamide drugs has become firmly established in the treatment of various infections, but the rapid and complete absorption of these chemicals from the gastrointestinal tract has made them valueless in the therapy of local enteric infections. The report by Marshall, Bratton, White and Litchfield,[1] describing the properties of sulfaguanidine, the analogue of sulfathiazole and sulfapyridine, was received, therefore, with great interest. This drug was found to be soluble in water in amounts sufficient to cause adequate bacteriostasis of intestinal pathogens but was poorly absorbed from the bowel, so that a high concentration in the intestinal content and a low concentration in the blood and tissues was readily attained. Animal experiments suggested that the number of coliform bacteria in the feces of mice,[1] dogs and monkeys [2] could be reduced by the administration of sulfaguanidine.

In vitro experiments [3] have demonstrated that this chemical strikingly inhibits the growth of strains of Flexner, Sonne and Shiga varieties of dysentery bacilli, and also of Salmonella cholerae suis and Salmonella para A but is ineffective against other organisms in the Salmonella group.

It has been suggested that the apparent failure of absorption of sulfaguanidine might be due to a removal of the drug from the blood stream by the liver and a return of the material to the gastrointestinal tract

From the Department of Medicine, Stanford University School of Medicine.

1. Marshall, E. K., Jr.; Bratton, A. C.; White, H. J., and Litchfield, J. T., Jr.: Sulfanilylguanidine: A Chemotherapeutic Agent for Intestinal Infections, Bull. Johns Hopkins Hosp. **67**: 163 (Sept.) 1940.
2. Corwin, W. C.: Studies on the Chronic Toxicity of Sulfanilylguanidine, Bull. Johns Hopkins Hosp. **69**: 39 (Aug.) 1941.
3. Bornstein, Siegbert, and Strauss, L.: Selective Action of Sulfanilylguanidine on Different Salmonella Types and Its Practical Importance, Proc. Soc. Exper. Biol. & Med. **47**: 112 (May) 1941.

in the bile. Hubbard and his associates [4] have recently studied this possibility and have shown that the concentration of the drug in the bile was sufficiently low to exclude the possibility of any important degree of reexcretion into the intestine.

This experimental evidence logically suggested a trial of sulfaguanidine in acute bacillary dysentery. A group of 17 children were treated by Marshall, Bratton, Edwards and Walker,[5] who felt that the results obtained were satisfactory, especially if chemotherapy was begun before the third day of the disease. The drug was found to be very poorly absorbed from the gastrointestinal tract, as had been anticipated from the previous animal experiments. The use of sulfaguanidine in the treatment of bacillary dysentery has also been described by Lyon,[6] who studied two groups of 23 patients, one of which was treated with this drug. Bacteriologic diagnosis was made in only one third of the cases. Clinical improvement occurred in 18 of the treated cases within forty-eight hours, and recovery was well established in a few days. Fever continued, in the control group, for two weeks in association with bloody purulent diarrhea and loss of weight and strength.

The course of chronic bacillary dysentery in 2 babies was not altered by the exhibition of sulfaguanidine,[6] and no other trials of the use of this agent in the treatment of chronic cases of this disease, or of healthy carriers of dysentery bacilli, appear to have been reported. The presence of typhoid bacilli in the gallbladders of carriers of this organism may cause local chemotherapy to be ineffective in the control of this condition. Eradication of these bacteria from the stools of 1 patient following the administration of sulfaguanidine has been described.[7]

In the treatment of acute bacillary dysentery, sulfaguanidine has usually been administered in an initial oral dose of 0.1 Gm. per kilogram of body weight, to be followed by 0.3 Gm. per kilogram in divided doses every twenty-four hours until clinical improvement has occurred. The dose is then halved and continued for at least three days.

The toxic manifestations that may be observed in association with the use of sulfaguanidine are similar to those encountered with the other sulfonamides. Fever, skin rash, conjunctivitis, anemia and crystalluria have been described but have not been severe in any case.[8] No signs of toxicity or postmortem evidence of tissue damage were observed in monkeys treated with large doses for one month.[5]

PRESENT STUDY

Dysentery bacilli were isolated from the stools of 10 employees of a San Francisco hospital during a recent survey. These persons and one other man were selected for treatment with sulfaguanidine in an attempt to eliminate dysentery bacilli from their stools.

The accompanying table summarizes the data pertinent to the study and treatment of these patients. All of the isolated organisms were nonmotile and fermented mannite and xylose. Only one failed to attack dulcitol. Agglutination tests were performed and the results are shown in the table. Most of the strains were agglutinated by antiserums for Shigella alkalescens and the Flexner X and V varieties.

These are, in general, the characteristics of Sh. alkalescens.[9] The pathogenicity of this variety of dysentery bacillus in man has only recently been established in spite of its close antigenic and cultural relationship to the usual Flexner types. The failure of many laboratories to perform adequate differential tests accounts, in part, for the slow recognition of the bacillus. In this clinic Sh. alkalescens has been isolated from examples of acute and chronic dysentery and is more frequently recovered than any other variety of dysentery bacillus.

Observations and Treatment in Eleven Cases

Patient	Organism Type and Highest Titer	Reactions to Chemotherapy	Sulfaguanidine		Stool Cultures			
			Total Dose in Gm.	Blood Level Mg. per 100 Cc.	Number Positive Before Treatment	Day of Treatment First Negative	Number of Days Negative	Number Negative
1	V—1/640 Z—1/80 Alk.—0	Headache Nausea Cramps	16	0.2	1	3	110	11
2	X—1/2,560 V—1/640 Alk.—1/640	None	60	2.8	2	5	60	5
3	X—1/640 V—1/160 Alk.—1/160	Nausea Vomiting	48	2.5	3	4	70	5
4	X—1/1,280 V—1/640 Alk.—1/160	None	75	0.5	3	4	100	11
5	X—1/640 V—1/640 Alk.—1/160	Headache	48	1.5	2	3	95	5
6	V—1/1,280 Alk.—1/160	Headache	72	2.9	2	2	40	5
7	X—1/1,280 V—1/640 Alk.—1/160	Headache	48	1.1	2	4	90	5
8	X—1/160 Alk.—1/160	None	48	1.5	2	4	30	6
9	X—1/5,120 V—1/1,280 Alk.—1/320	None	48	1.6	4	4	30	6
10	X—1/160 V—1/80 W—1/80	None	48 60 117	3.2 2.6 ...	2	Never 4 4	0 0 0	0 0 0
11	X—1/640 V—1/160 Alk.—1/60	None	72 84 96	5.0 2.1 5.0	15	Never 4 4	0 0 0	0 0 0

About half the patients had had mild gastrointestinal symptoms before treatment. These were rather nonspecific in character, chiefly abdominal cramps and diarrhea. Patient 5 had had several loose bowel movements daily for more than a year. A course of atabrine was administered for the purpose of eliminating an infection with Giardia lamblia, but he continued to have four or five stools a day, from which many dysentery bacilli could be isolated before treatment was begun. Each patient received 12 Gm. of sulfaguanidine[9a] daily for from two to six days. The total amounts varied from 16 to 84 Gm., the average being about 50 Gm. The drug was discontinued voluntarily on the second day, because of nausea and vomiting, by 1 patient. All the others completed the course prescribed.

Stool specimens were collected in each case on every second or third day during the first ten days of observation after treatment was begun and then at

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5. Marshall, E. K., Jr.; Bratton, A. C.; Edwards, Lydia B., and Walker, Ethel: Sulfanilylguanidine in the Treatment of Acute Bacillary Dysentery in Children, Bull. Johns Hopkins Hosp. **68**: 94 (Jan.) 1941.

6. Lyon, G. M.: Chemotherapy in Acute Bacillary Dysentery, West Virginia M. J. **37**: 54 (Feb.) 1941.

7. Levi, J. E., and Willen, Abner: The Typhoid Carrier State Treated with Sulfaguanidine, J. A. M. A. **116**: 2258 (May 17) 1941.

8. Marshall, Bratton, Edwards and Walker.[5] Lyon.[6]

9. Felsen, Joseph, and Wolarsky, William: Bacillary Dysentery Due to Bacillus Alkalescens, New York State J. Med. **40**: 1303 (Sept. 1) 1940. Branston, Mary, and Eldering, Grace: Cultures of the Dysentery Group Isolated in Western Michigan, J. Infect. Dis. **68**: 113 (March-April) 1941.

9a. Supplied by the Lederle Laboratories, Pearl River, N. Y.

approximately weekly intervals. Sulfaguanidine was demonstrated in the stools by qualitative tests for four to five days after the cessation of treatment. Cultures were made of every stool. The amount of sulfaguanidine in the blood of each patient was determined on the third or fourth day of treatment by the method of Bratton and Marshall.[10]

RESULTS

Dysentery bacilli disappeared from the stools of 9 of the treated patients during the period of sulfaguanidine administration. Repeated culture of the stools of these persons over an interval of from one to three months has failed to disclose pathogenic organisms on any occasion. In the other 2 cases, treatment was undertaken on three occasions, with progressively larger amounts being given. After the second and third courses of chemotherapy the dysentery bacilli disappeared from the stools of these patients, only to return shortly after the withdrawal of the drug. Patient 5 had symptoms which appeared to be due to chronic infection with dysentery bacilli. Since treatment, his diarrhea has disappeared, his appetite has improved and he has gained weight.

Certain of the treated patients have stated that symptoms referable to the gastrointestinal tract were less severe following treatment with sulfaguanidine. The nature of these complaints is such that evaluation of this observation is impossible.

Few toxic manifestations were noted. Nausea and vomiting occurred in case 1 after 16 Gm. and in case 3 after 48 Gm. of the drug had been administered, but these symptoms were neither severe nor prolonged. Five subjects had slight to moderately severe headaches, lasting twenty-four to forty-eight hours. No drug fevers, rashes, hematuria, oliguria or anemias developed. In general, the subjects were all able to remain ambulatory and to work throughout the treatment.

The amount of sulfaguanidine in the blood was consistently small. The variation was from 0.5 to 5 mg., with an average of 2.22 mg. per hundred cubic centimeters of blood. Sulfaguanidine could be detected in the stools for about five days after treatment was discontinued.

COMMENT

Little is known of the incidence of healthy dysentery carriers among civil groups. It is becoming apparent, however, that bacillary dysentery is an important problem in the United States. Felsen [11] has pointed out that this disease was reported sixteen times as frequently in 1937 as in 1933. Inexpensive transportation, leading to a shifting population, and congestion in urban areas may be partially responsible for this increase.

It is often difficult to distinguish clinically between healthy carriers and patients with mild chronic bacilliary dysentery, since functional complaints of the former may be identical with the symptoms of organic disease of the latter. Felsen,[12] in a follow-up after the Jersey City epidemic of acute bacillary dysentery in 1934, found that 10 per cent of the patients had persistent complaints varying from mild diarrhea and abdominal cramps to severe forms of regional ileitis and ulcerative colitis. About half of the patients treated with sulfaguanidine during the present study had had mild symptoms referable to the gastrointestinal tract, and some felt that they were benefited by treatment. All but 1 should probably be regarded as healthy carriers.

In general, the results of treatment of this group of dysentery carriers with sulfaguanidine have been very encouraging. The stool cultures of 9 of the 11 patients became negative during treatment and have remained so for periods varying from thirty to ninety days. The reason for the failure in the other 2 is not clear. It may be significant that the organisms isolated were serologically different from most of the other strains.

The daily amount of sulfaguanidine administered was smaller and the duration of treatment was shorter than that suggested for acute dysentery, but effective concentrations in the intestine were attained in most instances. A few toxic reactions occurred, but the patients were all able to remain at work while taking the drug.

Dysentery bacilli may not always be so easily eradicated from the stools by the action of chemotherapeutic agents. The organisms isolated from the patients included in this study were closely related biochemically and serologically and were somewhat different from the typical Flexner varieties. They may have been unusually sensitive to the action of sulfaguanidine.

Insufficient clinical and experimental data are available to determine accurately the value of sulfaguanidine in acute bacillary dysentery. Administration of the drug early in the disease appears to have a favorable influence on the course of the infection. That this chemical exerts a profound bactericidal effect on some bacilli of the dysentery group is indicated by the rapid and permanent elimination of these organisms from stools of the carriers described in this study. A similar action should occur to some degree in cases of acute infection with resulting cure or amelioration of the disease. The observations reported in this paper, therefore, provide additional evidence that sulfaguanidine is an effective agent to be used in the treatment of acute and chronic bacillary dysentery.

The healthy carrier of dysentery bacilli is probably the source of most cases of sporadic infection.[13] In closed groups, such as hospitals, prisons and army camps, such persons at work in the kitchen are frequently responsible for the outbreak of serious epidemics. One of the most difficult problems arising in the control of such epidemics has been the absence of any satisfactory method for rendering the discovered carriers noninfectious. If the satisfactory results obtained in the treatment of carriers reported in this study are extended and confirmed, sulfaguanidine will become a valuable adjunct to the control of the spread of bacillary dysentery both in civil life and in the armed forces.

SUMMARY AND CONCLUSIONS

1. Eleven patients, from whose stools dysentery bacilli have been repeatedly isolated, have been treated with sulfaguanidine. About half had mild gastrointestinal complaints, but, with one exception, they are all regarded as healthy carriers.

2. In 9 of the 11 cases, dysentery bacilli disappeared from the stools during treatment and have not returned over periods varying from thirty to ninety days. This result was not obtained in 2 instances after three courses of treatment.

10. Bratton, A. C., and Marshall, E. K., Jr.: A New Coupling Component for Sulfanilamide Determination, J. Biol. Chem. **150**: 537 (May) 1939.

11. Felsen, Joseph: The Problem of Bacillary Dysentery, Am. J. Trop. Med. **19**: 333 (July) 1939.

12. Felsen, Joseph, and Gorenberg, Harold: Chronic Dysentery, Distal Ileitis and Ulcerative Colitis, Am. J. M. Sc. **192**: 553 (Oct.) 1936.

13. Zinsser, Hans, and Bayne-Jones, Stanhope: Textbook of Bacteriology, New York, D. Appleton-Century Company, 1939, p. 545.

3. All patients remained ambulatory and continued work while being treated. Few toxic manifestations were noted.

4. These favorable results suggest that further clinical trials are indicated both in healthy carriers and in cases of chronic bacillary dysentery.

5. This drug, which is adapted for use in ambulatory patients, may become a valuable adjunct to the control of the spread of bacillary dysentery, both in civil life and among the armed forces.

CONTROL OF CROSS INFECTIONS OF THE RESPIRATORY TRACT

IN A NURSERY FOR YOUNG INFANTS: A PRELIMINARY REPORT

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AND
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The adoption of the Dick aseptic nursery technic[1] at The Cradle in 1929 practically eliminated hand borne cross infections, such as enteritis and impetigo. Figure 1 illustrates the effect of this technic on the number of deaths due to enteritis contracted after admission. During the six years prior to the introduction of this aseptic technic (1923 to 1928) a total of 942 infants was admitted. There were 55 deaths, 53 due to enteritis. In 40 of the fatal cases infection was contracted after admission. During the twelve years since the introduction of the aseptic technic 3,132 infants have been admitted. There were 26 deaths, 6 due to enteritis. In no case was infection contracted after admission. The total mortality rate before the introduction of the aseptic technic was 5.8 per cent and after its introduction 0.8 per cent.

There remained, however, the problem of the respiratory cross infections. Nine infants died from infections of the respiratory tract after the introduction of the aseptic technic. Seven of them contracted the infection after admission. Figure 2 demonstrates the incidence of cross infection of the respiratory tract in infants during the last two years in the old building. Although there were seasonal differences, some infections were present at all times of the year. Thus in 1938 there occurred a midsummer infection of the respiratory tract involving all but 1 infant of a twelve crib unit and six attendants.[2] The epidemic was introduced by an infant admitted with a cold. In 1 of the cases of secondary infection fatal bronchopneumonia developed.

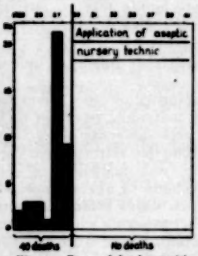

Fig. 1.—Cases of fatal enteritis contracted after admission before and after introduction of aseptic nursery technic.

1. Dick, G. F.; Dick, Gladys H., and Williams, J. L.: Etiology of Epidemic of Enteritis Associated with Mastoiditis in Infants, Am. J. Dis. Child. **38**: 955 (June) 1928. Aseptic Nursery Technic as Used at The Cradle, ed. 2, Evanston, The Cradle Society, 1941.

2. Sauer, L. W., and McDonald, J. J.: A Midsummer Respiratory Infection in an Aseptically Conducted Adoption Nursery, J. Pediat. **14**: 304 (March) 1939.

A new building was erected in 1939 to investigate newer principles in the control of air borne infections: air conditioning, germicidal lights and mechanical barriers. This building was divided into three units of twelve cubicles each.

The cubicles in the control unit are separated from one another by complete partitions but are open at the front. Each cubicle is air conditioned with 100 per cent outside air. The air, at a temperature of 75 F. and a relative humidity of 40 per cent, enters near the ceiling and leaves near the floor. There is a complete change of air every six minutes. Thermostats are placed to maintain a constant temperature throughout the unit.

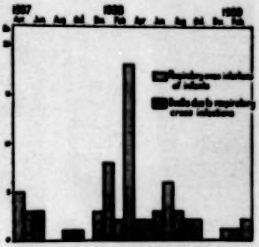

Fig. 2.—Cross infections of respiratory tract in infants during last two years in old building: 68 cases, 3 deaths.

The only principle applied in this unit to prevent air borne infections is that of air conditioning.

The light unit (fig. 3) was designed by William F. Wells,[3] who had made important contributions on light as a bactericidal agent. This unit is air conditioned like the control unit; in addition, germicidal lights[3a] are placed above the open end of each cubicle so that a vertical curtain of light is thrown across each entrance. Six of these cubicles are separated by partitions from ceiling to floor; in the other six cubicles light curtains replace alternate solid partitions. Ventilation tests of the bactericidal tightness of the light curtains showed that about 99 per cent of the test organisms were killed as they passed through the light barrier. The light curtains are designed so that only a harmless fraction of the rays reaches the corner of the cubicle where the head of the infant is exposed. The nurses' eyes are protected by head shields and goggles. The spectrum band of this light differs from the customary ultraviolet in that approximately 90 per cent of its rays are of 2,537 angstrom units. Favorable results with the application of germicidal lights in infants' and children's wards and schoolrooms have been reported by McKhann, Steeger and Long; del Mundo and McKhann; Wells, Stokes, Wells and Wilder; Barenberg, Greene and Greenspan, and Greene, Barenberg and Greenberg.[4]

The barrier unit (fig. 4) was designed by James A. Reyniers,[5] who had made important contributions to the

3. Wells, W. F., and Wells, Mildred W.: Air-Borne Infection, J. A. M. A. **107**: 1698 (Nov. 21) 1936; Air-Borne Infection: Sanitary Control, ibid. **107**: 1805 (Nov. 28), 1936; Measurements of Sanitary Ventilation, Am. J. Pub. Health **28**: 343 (March) 1938. Wells, W. F.; Wells, Mildred W., and Mudd, Stuart: Infection of Air: Bacteriologic and Epidemiologic Factors, ibid. **29**: 863 (Aug.) 1939.

3a. The germicidal lamps were supplied by the General Electric Company.

4. McKhann, C. F.; Steeger, Adelbert, and Long, A. P.: Hospital Infections, Am. J. Dis. Child. **55**: 579 (March) 1938. del Mundo, Fe, and McKhann, C. F.: Effect of Ultraviolet Irradiation of Air on Incidence of Infections in an Infants' Hospital, ibid. **61**: 213 (Feb.) 1941. Wells, W. F.; Stokes, Joseph; Wells, Mildred W., and Wilder, T. S.: Experiments in the Environmental Control of Epidemic Respiratory Infection, Tr. & Stud. Coll. Physicians, Philadelphia **7**: 342 (Feb.) 1940. Barenberg, L. H.; Greene, David, and Greenspan, Leon: Effect of Irradiation of the Air in a Ward on the Incidence of Infections of the Respiratory Tract, Am. J. Dis. Child. **59**: 1219 (June) 1940. Greene, David; Barenberg, L. H., and Greenberg, Bernard: Effect of Irradiation of the Air in a Ward on the Incidence of Infections of the Respiratory Tract with a Note on Varicella, ibid. **61**: 273 (Feb.) 1941.

5. Reyniers, J. A.: The Use of Mechanical Barriers in Preventing Cross Infections Among Hospitalized Infant Populations, University of Notre Dame Symposium on Germ Free and Microgical Technic, to be published.

control of air borne cross infections with the aid of air conditioning and mechanical barriers. This unit contains twelve completely closed cubicles, each provided with individual air conditioning. A tightly fitting swinging door separates each cubicle from the corridor

Fig. 3.—Light unit; there are germicidal light barriers at each cubicle entrance and between alternate cubicles.

of the unit. Six cubicles are each subdivided by a sliding glass partition into an inner or infant's section and an outer or nurse's section. Each section has its own air intake and exhaust. The nurse enters the

Fig. 4.—Barrier unit; the partition between nurse's and infant's sections is partly raised.

outer section, prepares there for the care of the infant, raises the sliding glass partition not higher than to her shoulder level, attends the infant and then lowers the partition. A greater air pressure is maintained in the infant's section, so that the flow of air is toward the nurse's section whenever the partition is raised. The remaining six cubicles are not subdivided.

Clinical observations and bacteriologic investigations were conducted to determine which of the three units was most efficient in controlling the spread of air borne infections.

CLINICAL OBSERVATIONS

The clinical observations were limited to infants in the first three months of life and included only the infections of the respiratory tract, such as the common cold. Therefore, the conclusions could not be applied to older children or to other types of air borne infections, such as chickenpox. Despite these limitations several distinct advantages offered a unique opportunity for a clinicoepidemiologic study:

1. The three units were completely separated and usually had their own staff of nurses. The number of attendants was about the same in all the units.

2. Except for the special principles under investigation, the conditions in the three units were identical—conditioned air with the same temperature and humidity, equipment, individual aseptic technic and sterile food.

3. The same number of infants of approximately the same age and the same number of premature infants were admitted to all units. The stay was about the same.

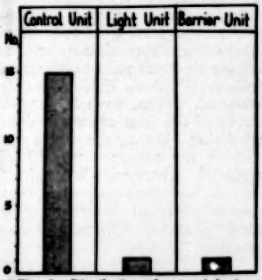

Fig. 5.—Distribution of cross infections of respiratory tract in infants in the three units of new building (April 1, 1939 to April 5, 1941): 15 in control unit, 1 in light unit and 1 in barrier unit.

4. About the same number of infants and nurses with acute infections of the respiratory tract were admitted to the units.

5. There were no visitors.

6. As hand borne cross infections were practically eliminated at The Cradle, cross infections of the respiratory tract from infant to infant were considered air borne.

For clinicoepidemiologic information the following routine records were kept: an individual record of each infant, an individual record of each sick nurse and a daily report of the unit. Thus a complete retrospective epidemiologic picture of each unit was maintained.

The number of cross infections of the respiratory tract in infants during the two years before the new nursery was constructed was compared with that for the two years in the new building. There were 68 such infections during the former period and 17 during the latter. The number per hundred infants admitted decreased from 14.5 to 4.6.

The distribution of the 17 cross infections in the three units was striking: 15 in the control unit, 1 in the light unit and 1 in the barrier unit (fig. 5).[5a] This distribution was all the more significant because the number of primary infections of the respiratory tract (in nurses on duty and in infants admitted with colds) was about the same in the three units, as shown in the accompanying table.

5a. Since April 6, 1941, six additional cross infections of infants have occurred in the control unit, none in the two other units.

Ten of the 15 cross infections of the respiratory tract in infants in the control unit occurred during a seasonal outbreak between Feb. 11 and April 5, 1941 (fig. 6). This infection in nurses as well as in infants was characterized by an almost afebrile course, profuse nasal discharge, frequent sneezing, spasmodic cough and, in some infants, pronounced wheezing of several days' duration with sonorous and sibilant rales, mostly during expiration. The spasmodic cough in the first infant was so severe as to lead to the suspicion of pertussis, but laboratory tests including examination of a cough plate did not show Hemophilus pertussis or Hemophilus influenzae. During this epidemic three infected nurses were on duty in the control unit, six in the light unit and three in the barrier unit. One infant was admitted to the barrier unit with an infection of the respiratory tract. Ten cross infections occurred in the infants in the control unit but none in either the light or the barrier unit. Apparently conditions in the control unit (air conditioning) did not prevent the spread of this respiratory infection, whereas those in the light unit (air conditioning and germicidal light) and in the barrier unit (air conditioning and mechanical barriers) were efficient.

The detailed data compiled during this epidemic shed light on certain epidemiologic questions, such as the

Distribution of Primary Infections of Respiratory Tract in Three Units of New Building (April 1, 1939 to April 5, 1941)

	Control Unit	Light Unit	Barrier Unit
Primary infections of respiratory tract in nurses on duty	24	27	28
Primary infections of respiratory tract in infants	3	1	7
Totals	27	28	35

spread and the source of the infection. Figure 6 shows that the spread of the infection was not irregular throughout the unit. At first the infants in about half of the unit showed signs of the infection (infants 1 to 5); then the infection spread to the rest of the unit. Infant 8 was admitted to the cubicle after infant 3 had left. It seemed as if a certain density of the infective agent was necessary to produce the disease and that this density occurred only in the vicinity of the infected infant (see bacteriologic investigations, figure 8).

Detailed data on the source of the infection showed that the infection was introduced into the control unit between February 24 and March 2 by one or two nurses who remained on duty with infections of the respiratory tract (fig. 7). No nurse or infant in this unit had had a cold for three weeks. On March 5 an infant showed the first signs of infection. There followed a period, March 10 to March 17, during which it was impossible to determine whether the transmission occurred from nurse to infant or from infant to infant, because during this period one nurse and 2 infants with infection were in the unit. Although no nurse with symptoms of infection of the respiratory tract was on duty after March 11, the infection continued to spread from March 18 to April 5 until 7 more infants were involved. As several of these infants were severely ill, they were removed from the unit as indicated in figure 7, which shows the duration of stay in the unit. This period of eighteen days demonstrated clearly that the infection spread from infant to infant. The role of carriers among the nurses was not borne out by our experience at The Cradle, which was that infection of the respiratory tract did not occur in an infant unless

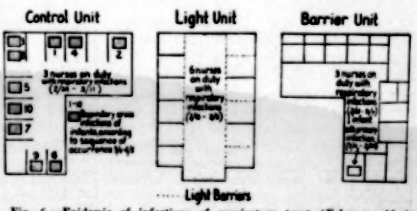

Fig. 6.—Epidemic of infections of respiratory tract (February 11 to April 5, 1941). Chart shows 3 cases of primary and 10 of secondary (cross) infection in the control unit; 6 of primary and 0 of secondary infection in the light unit, and 4 of primary and 0 of secondary infection in the barrier unit.

there was a primary infection in an infant or a nurse. It may be mentioned here that cultures of material from the nose and throat in nurses and infants showed the presence of Streptococcus hemolyticus only in the throats of two nurses, one of whom had had repeated colds.

During the two years in the new building there were ninety primary infections of the respiratory tract, seventy-nine among nurses and eleven among infants. In only 5 instances was it evident that a nurse had infected an infant; in 9 instances the transmission occurred from infant to infant; in 3 instances the source of infection could not be determined. As the nurses come in close contact with the infants, it is striking that transmission from nurse to infant was so infrequent. The filtering mask worn by the nurses usually protects the infant.[6] Recent photographs by Jennison[7] showed that this mask filtered out droplets.

BACTERIOLOGIC INVESTIGATIONS[8]

Although clinical observations were decisive, bacteriologic tests supplied valuable corroboratory evidence. One of the methods used was to spray a suspension of Bacillus prodigiosus in each unit and by means of exposed Petri dishes of culture medium to determine the

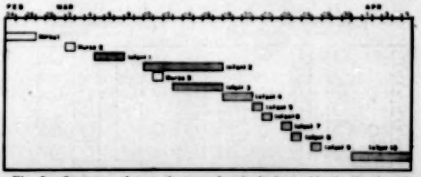

Fig. 7.—Sequence of cases in control unit during epidemic showing the duration of stay of infected nurses and infants in the unit. The infection was introduced by nurses and spread from infant to infant during the last period (March 18 to April 5).

extent of its penetration and survival. This harmless organism was chosen because it lent itself readily to unmistakable identification. It was used in 1926 by

6. McKhann, C. F.; Steeger, A., and Long, A. D.: Hospital Infections, Illinois Health Messinger **10**: 38 (March) 1938.
7. Personal communication to the authors.
8. In collaboration with E. Kammerling, B.S., Department of Health, City of Chicago.

Dzialoszinski and Finkelstein.[9] To simulate the various sites of possible source of infection, the suspension was sprayed in a cubicle in one series of experiments and in the unit corridor in another series. In each experiment plates were exposed throughout the unit. After

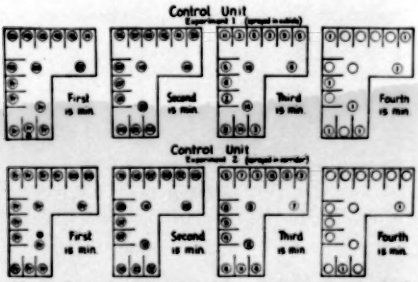

Fig. 8.—Penetration and survival of B. prodigiosus in control unit. In experiment 1 a suspension of the organism was sprayed in a cubicle and in experiment 2 in the corridor. The illustration shows penetration into all parts of the unit and the presence of some organisms after forty-five minutes. Black dots, site of spraying; numbers in circles, plates exposed and numbers of colonies; Pr, profuse growth.

an inculation period of forty-eight hours at room temperature the number of colonies was counted.

Figure 8 illustrates the findings in two typical experiments in the control unit. In experiment 1 B. prodigiosus was sprayed in a cubicle; in experiment 2 it was sprayed in the unit corridor. Plates were exposed for four consecutive fifteen minute periods. In each experiment the colony count demonstrated complete penetration into all parts of the unit. Some organisms were still present forty-five minutes after the spraying. The number of bacteria decreased with the distance from the site of spray.

Similar experiments were conducted in the light unit (fig. 9). It was found that practically no penetration occurred from unit corridor to cubicle or from cubicle to unit corridor. The survival time was limited to the first fifteen minutes, i. e., B. prodigiosus was not found on any plate in the unit fifteen minutes after the spraying. These experiments were performed with newly installed lights. Lights in constant use for about four months showed some diminution in germicidal

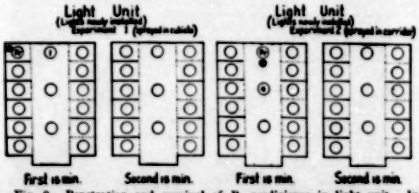

Fig. 9.—Penetration and survival of B. prodigiosus in light unit. In experiment 1 the suspension was sprayed in a cubicle and in experiment 2 in the corridor. There is practically no penetration, and survival is for not more than fifteen minutes.

power. Experiments with the lights off gave results similar to those in the control unit.

Throughout the barrier unit, where doors and partitions had to remain closed during the experiment, plates were exposed continuously for one hour. Therefore, only the extent of penetration and not the survival time could be determined. The results (fig. 10) showed that there was no penetration from cubicle to cubicle, some from cubicle to unit corridor (as was expected) and but slight penetration from unit corridor to cubicle.

9. Dzialoszinski, Ismar, and Finkelstein, H.: Was leisten offene Boxen bei der Bekämpfung der Tröpfcheninfektion in Kinderspitälern? Ztschr. f. Kinderh. 41:625, 1926.

COMMENT

These bacteriologic data on the spread of B. prodigiosus parallel the clinical observations on spread of infections of the respiratory tract in the three units both over the two year period and during the seasonal epidemic. Fifteen of 17 cross infections of infants occurred in the control unit, where also the seasonal epidemic broke out. B. prodigiosus, when sprayed in a cubicle of the control unit, penetrated into all the other cubicles of the unit. When sprayed in a cubicle of the light or the barrier unit this organism did not penetrate into other cubicles of the unit.

During the two years the principle of air conditioning alone, as used in the control unit, did not prevent the spread of infections of the respiratory tract, whereas the addition of germicidal light barriers or mechanical barriers was efficient. Which of the two principles is the one of choice cannot yet be decided. Each has its advantages and disadvantages, several of which may be mentioned. Germicidal light barriers require pro-

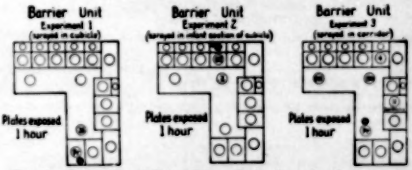

Fig. 10.—Penetration of B. prodigiosus in barrier unit. In experiment 1 a suspension was sprayed in a cubicle without a partition, in experiment 2 in the infant's section of a cubicle with a partition and in experiment 3 in the corridor. There was no penetration from cubicle to cubicle, some penetration from cubicle to corridor as was expected, and slight penetration from corridor to cubicle.

tection of nurses and infants to prevent local effects on the skin and the conjunctivas. Investigations on any systemic effects have not yet been made. No harmful effects have been noted. The installation cost of the light is low, but the maintenance cost is high, regular lamp replacements being required. The mechanical barriers have been found somewhat inconvenient by the nurses, because the partitions must be raised and lowered each time an infant is attended. The infant cannot be observed readily. After a few weeks a certain lack of stimulation of the infant is occasionally apparent. On the other hand, the infant is protected against noise, so that the average daily sleeping time is about two hours longer than in the other units. The installation of mechanical barriers is expensive, but the maintenance cost is low. Whether light barriers or mechanical barriers are equally efficient without air conditioning is now under investigation.

CONCLUSIONS

Air conditioning, as used at The Cradle, did not prevent cross infections of the respiratory tract in infants.

Air conditioning and germicidal light barriers or air conditioning and mechanical barriers prevented such infections in infants.

DANGERS OF AERIAL TRANSPORTATION TO PERSONS WITH PNEUMOTHORAX

ROENTGENOGRAPHIC DEMONSTRATION OF THE EFFECT OF DECREASED BAROMETRIC PRESSURE (HIGH ALTITUDE) AND OF INCREASED BAROMETRIC PRESSURE

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Free gas within the human body tends to increase in volume when a person ascends in altitude and to decrease in volume when the atmospheric pressure is increased. This is in accordance with Boyle's law, which states that the volume occupied by a given quantity of gas is inversely proportional to the absolute pressure exerted on it (figs. 1, 2 and 3). Gas enclosed within a body cavity is under pressure of the external atmosphere, but this pressure can be modified significantly by the elastic properties of the walls of the enclosing organ and by pressure of surrounding structures. Those body cavities which communicate with the external atmosphere, such as the paranasal sinuses, are capable of equalizing pressure changes, provided the ostiums are not obstructed, but such equilization is not possible within the cavity of a closed pneumothorax. These changes occur at comparatively low altitudes; for example, 1,000 cc. of air (saturated with water vapor at 37 C.) becomes 1,500 cc. of air at the moderate altitude of 10,000 feet above sea level, since the volume of gas thus enclosed in the body tends to vary in volume according to the ratio $\frac{760-47}{Bar-47}$. It must be noted that air within body cavities is saturated with water vapor and that the pressure of water vapor at 37 C. is 47 mm. of mercury. This ratio omits the small factor of negative intrapleural pressure, which amounts to only a few millimeters. It is obvious that the higher the altitude reached, the greater is the effect of water vapor (fig. 1).

Pneumothorax is of particular interest to the physician who deals with problems of aviation medicine. Under no other conditions is such a large quantity of gas enclosed within the body cavities with no means of escape. This large quantity of gas is enclosed by tissues which are usually elastic, offering little resistance to expansion. The adjacent organs are of extreme physiologic importance, and their functions may be seriously impaired if they are much compressed. Phthisiologists have learned that it is essential that artificial pneumothorax be maintained under as uniform a pressure as is practicable and that great caution be exercised to avoid either excessive reexpansion of the lung or excessive compression of the lung in refilling the pneumothorax cavity. Rapid and frequent and decided contraction and expansion of the collapsed lung might well be deleterious to the healing process. These precautions are necessary to prevent mechanical forces from interfering with the healing of tuberculous lesions by fibrosis and to prevent the rupture of pleural adhesions, which so frequently are present. Adhesions frequently are attached to diseased lung tissue and when torn loose may result in a seeding of the pneumothorax cavity with Mycobacterium tuberculosis and the production of pleuritis, which may obliterate a valuable pneumothorax space or even lead to tuberculous empyema. Excessive compression of the lung also may reduce the vital capacity seriously and produce displacement of mediastinal structures with uncomfortable or even serious results. If expansion of the gas within the cavity does not occur, even greater strain might be placed on intrathoracic structures.

Further study of the effect of altitude on pneumothorax is especially timely because of the rapidly increasing use of the airplane as a means of long distance transportation.[1] The number of persons for whom artificial pneumothorax has been carried out is steadily increasing as a result of the increasing favor of this method of treating pulmonary tuberculosis. In a large majority of cases of active pulmonary tuberculosis, treatment by artificial pneumothorax is the treatment of choice. When satisfactory collapse is obtainable symptoms are promptly controlled, and as long as the state of collapse is maintained lesions usually remain latent. It has not been possible to determine when pneumothorax may be discontinued with safety; hence many physicians are recommending that pneumothorax be continued for several years and sometimes for many years, even though the patient remains well and an active member of society. As a result there are now thousands of persons with pneumothorax and many of them will be so maintained for years, if not for their entire lifetime. Furthermore, traumatic pneumothorax is not uncommon in injuries to the thorax, and spontaneous pneumothorax occasionally develops. For these reasons we believe it to be extremely important that physicians and patients learn all that can be known of the physiologic and pathologic effects of flight on the patient with pneumothorax.

In 1940 Gellenthien,[2] in an article on altitude and artificial pneumothorax, pointed out that a factor which may upset the equilibrium of a perfect collapse and be dangerous to the patient is the change in atmospheric pressure resulting from decided changes in altitude in traveling either by air or by surface transportation in mountainous regions. A formula was given to determine how high a person with a pneumothorax can go without the occurrence of positive pressure after a fresh supply of air has been injected into the pleural cavity. One of us[3] in 1940 pointed out the effect of decreased barometric pressure on the volume of gas in a closed pneumothorax.

It is immediately obvious that clinical and physiologic studies should be conducted among patients with pneumothorax to determine, if possible, how closely the theoretical hazards and the practical hazards of airplane travel coincide. Clinical experience has taught that many patients with artificial pneumothorax may fly as passengers in commercial airplanes and suffer no immediate ill effects. Complaints have been so few that most physicians have not warned such patients to avoid flying. It is certain that these physicians would be most alarmed should an artificial pneumothorax be refilled with 1,000 cc. of air or more; yet this is precisely what should happen, theoretically, when a patient with a large pneumothorax cavity ascends to the moderate altitudes frequently attained by commercial planes.

From the Division of Surgery (Dr. Lovelace), and the Division of Medicine (Dr. Hinshaw), the Mayo Clinic.

1. Lovelace, W. R., II, and Hinshaw, H. C.: The Hazards of Aerial Transportation to Patients with Pneumothorax, Proc. Staff Meet., Mayo Clin. **16**:40 (Jan. 15) 1941.
2. Gellenthien, C. H.: Altitude and Artificial Pneumothorax, J. A. M. A. **114**:727-728 (March 2) 1940.
3. Lovelace, W. R., II, in discussion, J. Aviation Med. **11**:9-11 (March) 1940.

In 1929 Rabino[4] reported a case in which discomfort during aerial flight occurred in a patient with artificial pneumothorax. In the same year Margaria, Talenti and Reviglio[5] reported their results of experiments on animals and advised against the aerial transportation of patients with artificial pneumothorax.

It would appear to be extremely important to determine by accurate roentgenographic methods whether or not the calculated expansion of pneumothorax during flight actually occurs or whether expansion is restrained and relative positive pressure develops. The theoretical degree of expansion which occurs at high altitude and an analysis of the several factors contributing to it have been published by Gellenthien and were discussed by one of us (Lovelace) in 1940.

Verification of these theoretical effects could not be conveniently accomplished during actual flight because of technical roentgenologic difficulties, but it is possible

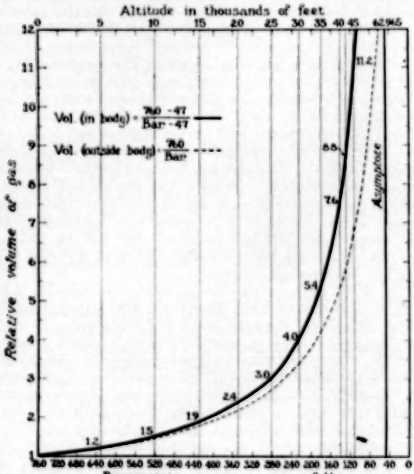

Fig. 1.—Comparative volumes of gases (saturated at 37 C.) inside the body at various altitudes. The pressure of water vapor at 37 C. (98.6 F.) equals 47 mm. of mercury.

to simulate any desired altitude within a low pressure chamber which is capable of accommodating the patient and the necessary apparatus. We have carried out this procedure in the Mayo Clinic Laboratory for Research in Aviation Medicine (Dr. Walter M. Boothby, director) and have been able to obtain roentgenograms of the thorax of good technical quality which clearly reveal the changes which occur in the size of a pneumothorax cavity when the pressure of the external atmosphere is either increased or decreased.

As anticipiated, there was considerable variation among different patients. A few were found whose pneumothorax did not expand to the degree anticipated by the application of Boyle's law. In these instances it was possible to explain the failure of the pneumothorax to expand on the basis of thickened pleura, adhesions, small capacity or other mechanical factors. One such patient underwent external pressures varying from two atmospheres to a half atmosphere with no visible differences in the roentgenograms. In this instance the condition of artificial pneumothorax was

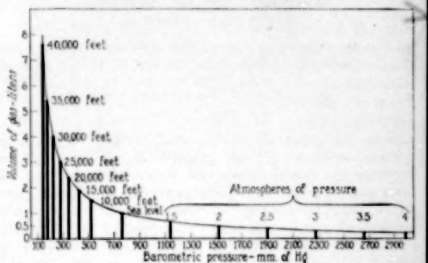

Fig. 2.—Comparative volumes of gases (saturated at 37 C.) inside the body at various increased and decreased barometric pressures.

being discontinued, and the negative pressure doubtless was unusually high. The patient had recently suffered from severe pleuritis, and a considerable degree of pleural thickening was visible in the roentgenograms of the thorax. This patient experienced no subjective symptoms during the study, but the intrapleural pressures must have varied widely in relation to the other thoracic structures.

Another patient was studied for whom extensive basal pneumothorax had been established and who had been receiving frequent large "refills" under positive pressure by his home physician, with the production of a posterior basal mediastinal hernia and considerable dyspnea and thoracic discomfort. In figure 4 *a* is shown the appearance of this particular pneumothorax at Rochester (elevation 1,000 feet above sea level) and in figure 4 *b* is depicted the effect resulting from pressure of two atmospheres (1,525 mm. of mercury). These figures demonstrate that the pneumothorax cavity was reduced to approximately half its former size, with consequent reexpansion of the lung and relief of

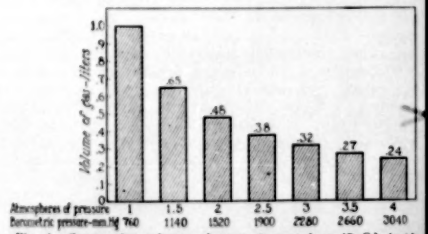

Fig. 3.—Comparative volumes of gases (saturated at 37 C.) inside the body at various increased atmospheric pressures.

the patient's dyspnea as long as the external pressure was maintained (figs. 2 and 3). By this method it was possible to visualize roentgenographically how the pneumothorax, the lung and the mediastinum would appear when the pneumothorax was reduced in volume by a half, and this was accomplished without entering the pneumothorax cavity and within a few minutes' time.

4. Rabino, A.: Pericoli dei viaggi aerei durante la cura pneumotoracica, Minerva med. (pt. 1) ❶1:624-626 (April 28) 1929.
5. Margaria, R.; Talenti, C., and Reviglio, G. M.: Modificazioni indotte dalla depressione barometrica sul pneumotorace: Studio sperimentale radiologico, Minerva med. (pt. 2) ❶1:637-647 (Oct. 27) 1929.

Three other patients entered the low pressure chamber, and the external pressure was reduced to simulate the effect of altitude of from 8,000 to 12,000 feet. Two of these patients had experienced discomfort during flight, and the procedure reproduced these symptoms. In 1 of these patients severe pleuritic pain in the anterior part of the thorax had developed on his ascent in a commercial passenger airplane to an altitude of 9,000 feet. He had sought medical advice as to the safety of this form of transportation in the future. The conditions of this flight were simulated in a low pressure chamber. The extent of the pneumothorax at ground level (1,000 feet), with extensive adhesions between the lung and the thoracic wall which appeared to be adequate to account for his pain, is shown in figure 5 *a*. The effect of simulated ascent to 10,000 feet is shown in figure 5 *b*. The effect on the small circumscribed basal pocket containing some fluid is especially apparent.

Another instance illustrating the effect of altitude on a pneumothorax is shown in figure 6 *a* and *b*. The appearance at ground level (1,000 feet) is shown in figure 6 *a*, and the effect of a simulated ascent to 10,000 feet is shown in figure 6 *b*. This patient had flown frequently and it was strongly suspected that the pleural

Fig. 4.—Basal pneumothorax and mediastinal hernia to contralateral side: *a*, appearance of the thorax at Rochester ground level (1,000 feet above sea level); *b*, appearance when atmospheric pressure is increased to twice that of sea level

effusion was the result of the frequent, rapid and decided changes in the degree of collapse. The degree of collapse produced in the low pressure chamber was very similar to that which would be anticipated by the application of Boyle's law. It is important to emphasize the fact that great changes in pneumothorax volume were observed in these studies, with little or no subjective discomfort for 2 of the patients. Such large changes in volume would appear to be very hazardous, but the patient's subjective symptoms would not always give warning of these apparent hazards. When symptoms did appear, they were apparently attributed to traction exerted on pleural adhesions or to reduction in vital capacity as a result of excessive collapse. Willcox and Foster-Carter [6] reported a case in which spontaneous pneumothorax occurred, during flight, in a pilot who had associated bullous emphysema as proved by roentgenograms and necropsy.

It would appear to be impossible to predict the safe "ceiling" for any patient with pneumothorax without actually subjecting him to flight or to experiments within a low pressure chamber, including the making of serial roentgenograms. Previous experience in flight at low altitudes may give a patient a false impression of safety, encouraging him to engage in further flight in which higher altitudes are reached, because of weather conditions or because of the duration of the flight, with discomfort or actual danger to the patient. The evidence accumulated seems adequate to justify warning all

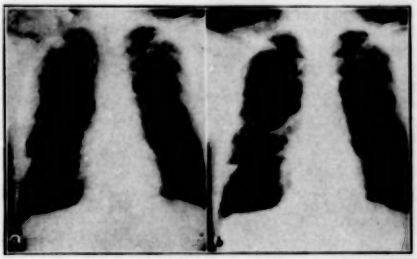

Fig. 5.—Partial artificial pneumothorax: *a*, appearance at Rochester ground level; *b*, appearance at simulated altitude of 10,000 feet above sea level. Compare size of basal fluid containing air pocket and of large apical pneumothorax with that in figure 5 *a*.

patients with pneumothorax to avoid transportation by airplane unless they can be assured that no altitude will be attained beyond that which they have previously tolerated without discomfort. Even under the latter condition it is possible that some harm might be done to unstable tuberculous lesions by the rather large degrees of alternate expansion and collapse which may be occurring repeatedly during a flight, especially when there are frequent landings. Traumatic or spontaneous pneumothorax would be affected in a manner similar to that described for artificial pneumothorax.

It should be reemphasized at this time that transportation by airplane offers no such hazards for those who do not possess pneumothorax, and that the exceptional comfort and speed available in modern airplanes, as well as care by stewardesses who are registered nurses, make airplane travel an ideal method of transportation for most patients. We believe, as a matter of fact, that physicians should encourage their patients to use the air-

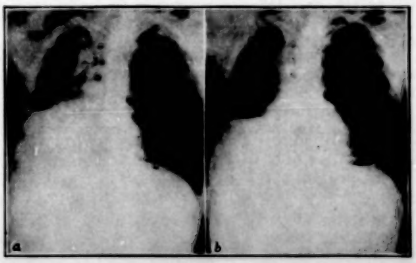

Fig. 6.—Hydropneumothorax: *a*, appearance at Rochester ground level; *b*, appearance at simulated altitude of 10,000 feet.

plane as a preferred mode of transportation. It is definitely superior to the automobile if the distance involved is considerable.

SUMMARY

Roentgenographic studies of the effects of increased and decreased barometric pressure on pneumothorax have been made. It has been possible to demonstrate

6. Willcox, A., and Foster-Carter, A. F.: Spontaneous Pneumothorax Associated with Bullous Emphysema, Lancet **2**:315-317 (Aug. 7) 1937.

that the principle of Boyle's law applies to closed free pneumothorax. The degree of increased pulmonary collapse produced by a simulated increase in altitude, however, may be restricted by pleural adhesions, by thickening of the visceral pleura and by fixation of the mediastinum. The moderate altitudes (5,000 to 12,000 feet) commonly attained by commercial passenger carrying airplanes are sufficient to produce a pronounced increase in the size or the pressure of a pneumothorax, whether this is of therapeutic, spontaneous or traumatic origin. The dangers attending fluctuations in degree of pulmonary collapse are increased shortly after "refilling" of a pneumothorax, when pleural adhesions are present, when disease in the collapsed lung recently has been active, when the patient's vital capacity is limited or when the pneumothorax is unusually extensive. Patients with a pneumothorax created for therapeutic reasons should be warned of these dangers, and physicians who care for injured persons should recall the possibility that traumatic pneumothorax might be present, presenting similar hazards if the patient is transported by airplane.

HEPATIC CHANGES PRODUCED BY ESTRONE, ESTRADIOL AND DIETHYLSTILBESTROL

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ST. LOUIS

In a previous communication we[1] showed that both diethylstilbestrol and estradiol may produce profound changes in the bone marrow and peripheral blood of dogs. The doses of these estrogens were in excess of the therapeutic range used in man. Changes in the liver consisting of fatty degeneration and central necrosis also were observed following the use of both drugs. However, these changes were not consistent and at the time we were unable to determine whether the hepatic change was the result of direct damage to the liver by the drugs or whether the hepatic damage was secondary to the changes in the bone marrow and peripheral blood.

Extensive clinical studies have resulted in a variance of opinion among different groups regarding the toxicity of diethylstilbestrol. Although some workers have suggested that side actions such as nausea may be the result of hepatic damage, no direct proof of this has been determined. One report implies that histopathologic hepatic changes may have been produced in a patient as the result of the administration of diethylstilbestrol.[2] Davis,[3] in 5 cases in which large doses of diethylstilbestrol were administered, found no histologic hepatic change which he felt could be attributed to the drug. Our studies indicate that any liver change occurring in dogs receiving diethylstilbestrol may also be found as the result of the administration of estrone or estradiol. It should be emphasized that microscopic studies of the livers of patients who have received large doses of the so-called natural estrogens are as yet wholly lacking. Apparently the "natural" or animal origin of these estrogens has not led to the suspicion that they might produce hepatic damage, while the synthetic nature of diethylstilbestrol immediately led to such suspicion.

PLAN OF STUDY

It seemed desirable to ascertain by a parallel study the effect on the livers of dogs of the more commonly used natural estrogens estrone and estradiol and of the synthetic estrogen diethylstilbestrol when administered in estrogenically equivalent doses.

As has been previously shown, natural or synthetic estrogens when administered to dogs produce profound changes in the blood and bone marrow. With progression of these changes, thrombocytopenic purpura occurs, which is followed by severe anemia and cachexia. It seemed possible that the anemic and the cachectic states might of themselves produce hepatic damage or might enhance previously existing hepatic damage and thereby interfere with the interpretation of the changes which might be produced in the liver by the estrogenic substances. In the present study, to avoid these possible complicating factors in the interpretation of the changes in the liver, we killed the animals before hemorrhage occurred.

MATERIALS AND METHODS

Eleven healthy dogs were used, 6 males and 5 females. All the animals were kept in the animal quarters for approximately two weeks before the studies were begun. In addition 4 dogs, 3 males and 1 female, served as controls and were examined post mortem at the end of the conditioning period. During this period of adjustment, red, white, differential, reticulocyte and platelet counts were done on the peripheral blood. After the experiments were started the peripheral blood elements were studied at frequent intervals.

The estrogens used were estrone, estradiol benzoate and diethylstilbestrol dipropionate.[4] These substances were administered daily by intramuscular injection. Crystalline diethylstilbestrol dipropionate was also given by mouth.

In order that comparative observations might be made, the estrogenic potency of the estrone, estradiol benzoate and diethylstilbestrol dipropionate was calculated in terms of international units. Because of the diverse nature of these estrogens and the different methods of assay used in estimation of their potency, comparisons can of necessity be only approximate. One mg. of estrone is equivalent to 10,000 international units. Estradiol benzoate has a potency of 6,000 rat units per milligram. One mg. of diethylstilbestrol dipropionate is equivalent to 20,000 international (estrone) units. It is widely accepted that 1 rat unit is approximately equivalent to 10 international units. Therefore 5 mg. of diethylstilbestrol dipropionate is calculated to have roughly the same estrogenic potency as 1.66 mg. of estradiol benzoate or 10 mg. of estrone (100,000 international units). It must also be remembered that the esterification of estrogens as the dipropionate or the benzoate also influences the comparison of the endocrine activity, both as to potency and as to duration of action.

A preliminary report of this work was read before the Central Society for Clinical Research, Chicago, Nov. 7, 1941.

From the Department of Medicine and the Department of Pathology, Washington University School of Medicine, and the Barnes Hospital.

1. Castrodale, Dante; Bierbaum, Olga; Helwig, E. B., and MacBryde, C. M.: Comparative Studies of the Effects of Estradiol and Stilbestrol on the Blood, Liver and Bone Marrow, Endocrinology **29**: 363-373 (Sept.) 1941.

2. Taylor, S. G., and Thompson, W. O.: Treatment of the Menopause with Stilbestrol, J. Clin. Endocrinol. **1**: 411-415 (May) 1941.

3. Davis, M. E.: A Clinical Study of Stilbestrol, Am. J. Obst. & Gynec. **39**: 938-953 (June) 1940.

4. Estrone for these studies was supplied by Roche-Organon, Inc., Nutley, N. J. Estradiol benzoate was supplied by the Medical Research Division of Schering Corporation, Bloomfield, N. J. Diethylstilbestrol was furnished by the Department of Medical Research of the Winthrop Chemical Company, New York.

Three dogs each received 100,000 international units of estrone (10 mg.) daily by injection. A group of 3 dogs were each given 10,000 rat units (1.66 mg.) of estradiol benzoate daily by injection. Diethylstilbestrol dipropionate was given to each of 3 dogs by daily injection in doses of 5 mg. (approximately 100,000 international units). Thus each dog in each of the three groups was given a daily dose of the respective estrogen approximately equivalent to 100,000 international (estrone) units.

One male and 1 female dog were given 400,000 international units (20 mg.) of crystalline diethylstilbestrol daily by mouth. This dose is four times that given by injection and is not calculated to be comparable in estrogenic potency to the estrogens given by injection.

All animals were killed when a severe thrombocytopenia developed but before the purpuric and hemorrhagic states occurred. Portions of liver and bone marrow from selected sites were immediately fixed in Bouin's solution. In addition, portions of liver were fixed in absolute alcohol and examined for glycogen by Best's carmine stain and in solution of formaldehyde U. S. P. diluted 1 : 10 and examined for fat by the scarlet red and nile blue sulfate stains.

RESULTS

Liver.—The changes produced in the livers of the dogs receiving the different types of estrogenic substances were essentially similar. These alterations varied among the groups of dogs receiving different estrogenic substances, but this variation was no more pronounced than in a single group of dogs receiving the same estrogenic substance. In general the changes occurring in the parenchymal cells of the liver were not prominent.

Of the 3 dogs receiving diethylstilbestrol by injection, 1 showed slight to moderate fatty degeneration confined chiefly to the middle zones of the liver lobules and slight shrinkage of the hepatic cells centrally. The

Fig. 1 (dog 19).—No drug given. Normal liver. The cytoplasm is rich in glycogen. In all four photomicrographs the stain was hematoxylin and eosin, and all are slightly reduced from a magnification of 133 diameters.

livers of the other 2 dogs exhibited slight fatty and hydropic degeneration of the hepatic cells confined chiefly to the central zones but not involving all central zones.

Of the 3 dogs receiving estradiol benzoate by injection, 1 showed moderate to advanced fatty and hydropic degeneration of the hepatic cells centrally and a slight fatty degeneration of the other hepatic cells. There was moderate intracellular and extracellular hemosiderin in fine granules present in the central zones. There were a few polymorphonuclear leukocytes present in the central zones, but no fibrin was identified. The hepatic changes in the other 2 dogs consisted of slight

Fig. 2 (dog 30).—Diethylstilbestrol. Minimal fatty degeneration, predominantly central. Myelopoiesis about central vein.

shrinkage of the cells centrally and in some instances mild fatty and hydropic degeneration of the cells in the central zones.

Of the 3 dogs receiving estrone, 1 exhibited advanced fatty and hydropic degeneration of the hepatic cells centrally together with loss of nuclei and cell outlines in some instances. There was no noticeable infiltration of polymorphonuclear leukocytes within the vacuolated areas, although many of the zones contained foci of myelopoiesis. The hepatic changes in the remaining 2 dogs consisted of slight shrinkage of the central cells in some instances and occasionally slight fatty degeneration of the hepatic cells.

Of the 2 dogs receiving diethylstilbestrol by mouth, the liver of 1 showed a minimal amount of central fatty degeneration and slight shrinkage of cells centrally. The liver of the other dog showed a minimal amount of fatty degeneration diffusely distributed throughout the lobules.

The amount of fat present within the livers as determined by the scarlet red and nile blue sulfate stains was at times no more pronounced in those animals receiving the various types of estrogen than it was in normal animals.

In several specimens the vacuoles within the hepatic cells failed to stain with scarlet red but took a blue or purple tint with the nile blue sulfate stain. In a few specimens the hepatic cells centrally contained vacuoles which failed to stain with either the scarlet red or the nile blue sulfate stain and were considered to be hydropic degeneration.

The amount of glycogen present within the livers as determined by Best's carmine stain showed considerable variation but was usually scanty. In no instance could glycogen be demonstrated in the large clear vacuoles. No correlation could be established between the amount of glycogen present and the degree of fatty and hydropic degeneration. Our observations are therefore at variance with those of Teague,[5] who studied

5. Teague, R. S.: The Effect of Estrogens on the Microscopic Appearance of the Liver, J. A. M. A. 117: 1242-1243 (Oct. 11) 1941.

the effects of diethylstilbestrol and of estradiol on the livers of rats. He concluded that the vacuolization of the liver cells was due to accumulation of glycogen rather than to hydropic or fatty degeneration.

One of the most striking findings in the liver was the occurrence of foci of myeloid cells about the central veins and occasionally about the portal spaces. These cells varied from predominantly immature myeloid cells to predominantly mature polymorphonuclear leukocytes. In those animals in which the hyperplasia of the bone marrow was least pronounced the liver usually contained fewer and smaller foci of myeloid cells. In those animals in which myeloid foci were present in the liver the degree of maturation of the myeloid cells in the liver tended to parallel the degree of maturation of myeloid cells in the bone marrow. An occasional mitotic figure was encountered in the foci of myeloid cells in the liver.

Bone Marrow.—Examination of the bone marrow from the vertebrae, ribs and long bones revealed an alteration of the normal marrow elements. This alteration showed slight quantitative variations but was otherwise essentially similar in all instances, regardless of the type of estrogen used. In general, regardless of the type of estrogenic substance employed, the marrow showed a variable degree of hyperplasia, predominantly of the myeloid elements. However, the state of maturation of the myeloid cells was variable, some marrows showing predominantly immature cells, some showing predominantly mature polymorphonuclear leukocytes and others showing focal areas composed chiefly of either immature or mature cells. The degree of maturation was usually more advanced in marrows studied from the long bones and ribs than it was in marrow selected from the vertebrae. In many instances the erythrogenic elements were obscured by the myeloid hyperplasia, but in general erythrogenesis appeared reduced. In a few specimens there were scattered small foci of hypoplasia in which the erythrogenic cells predominated. The stroma within these foci was loose and

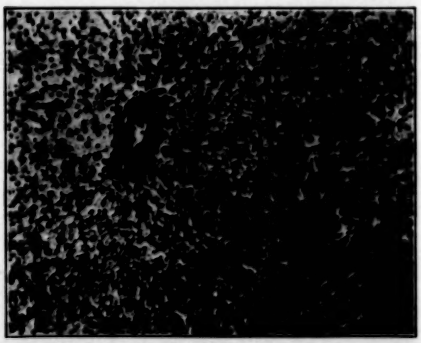

Fig. 3 (dog 24).—Estradiol benzoate. Minimal central hydropic and fatty degeneration. Myelopoiesis about central vein.

edematous and frequently took a faintly basophilic or acidophilic stain. One of the most constant changes throughout all the specimens of marrow studied was a sharp decrease in the number of megakaryocytes. In many instances several microscopic low power fields failed to disclose a single megakaryocyte. Occasionally these cells showed shrunken basophilic nuclei, but this was not a striking feature. Other megakaryocytes contained only two to three nuclei.

Peripheral Blood.—Essentially the same response was produced in the peripheral blood elements by estrone and estradiol benzoate as was observed with diethylstilbestrol dipropionate. The changes produced by the

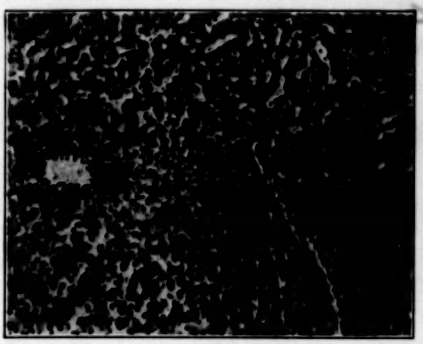

Fig. 4. (dog 39).—Estrone. Slight central fatty degeneration. Myelopoiesis about central vein.

various estrogens were indistinguishable as to quality and degree. The findings in each group consisted of leukocytosis and an almost simultaneous rapid fall in the thrombocytes. In some instances the platelets disappeared entirely from the blood. A moderate decrease in the red blood cells and hemoglobin was observed to follow the rise in granulocytes. The decrease in red blood cells and hemoglobin took place in the absence of hemorrhage, the occurrence of which we were careful to avert. These animals were not allowed to run their full course, since in this study we were primarily interested in hepatic changes. A full report of hematologic observations has been published.[5]

COMMENT

Until comparatively recently it was believed that all estrogenic substances must contain the phenanthrene nucleus. It is now known that many synthetic compounds not containing the phenanthrene nucleus are estrogenic. Diethylstilbestrol, the most widely studied of the synthetic estrogens, is approximately twice as potent when injected intramuscularly as the natural hormone, estrone. Even more important from the clinical standpoint is the fact that, unlike the natural estrogens, it is highly effective when taken orally. Since diethylstilbestrol does not occur in the animal body, it must be considered a drug rather than a hormone. For this reason a great deal of attention has been devoted to its possible toxic effects. Studies of hepatic function performed by ten different groups of workers on a large number of patients have not shown any clearcut evidence of damage to this organ.[6]

The fact that several investigators[7] have found evidence of hepatic damage resulting from the administration of diethylstilbestrol when given in very large doses

6. Morrell, J. A.: Summary of Some Clinical Reports on Stilbestrol, J. Clin. Endocrinol. **1**: 419-424 (May) 1941.

7. Loeser, A.: Klin. Wchnschr. **18**: 346, 1939. Grumbecht, P., and Loeser, A.: Klin. Wchnschr. **18**: 1195, 1939. Selye, Hans: Canad. M. A. J. **41**: 48 (July) 1939. von Haam, Emmerich; Hammel, M. A.; Rardin, T. E., and Schoene, R. H.: Endocrinology **28**: 263-274 (Feb.) 1941.

to animals indicates the need for a study such as the one presented here. The synthetic nature of diethylstilbestrol has no doubt caused the concentration of toxicity studies on it. Heretofore the possible toxic effects of the so-called natural estrogens have been neglected. We therefore have given approximately equivalent estrogenic doses of the natural hormones and of diethylstilbestrol to dogs and have studied the effects. The results of the present study confirm our previous observations [1] that diethylstilbestrol and estradiol produce similar effects on the blood and bone marrow of dogs. We have in addition, as shown in the table, found observation or tests of hepatic function any evidence of damage to the liver among a large number of patients treated with diethylstilbestrol. It seems unlikely that the usual therapeutic doses of diethylstilbestrol or of the natural estrogens will produce hepatic damage. There may, of course, be a great difference in species susceptibility, but it would seem possible that extremely large doses of either synthetic or natural estrogens might produce changes in the liver in human beings. We may conclude from this study that, when given to dogs, large doses of the natural estrogens estrone and

Liver and Blood Changes Produced by Estrogens

Dog	Drug	Daily Dose	Day Killed	Total Dose	Hepatic Changes	Blood Changes									
						Day	W. B. C.	P. M. N. Seg.	P. M. N. Bands	Myelocytes	Red Blood Cells	Hemoglobin Gm.	Hemoglobin %	Platelets	Reticulocytes
32 ♀	Diethylstilbestrol	5 mg.	20	100 mg.	Slight central fatty and hydropic degeneration; moderate myelopoiesis, maturation variable	1	22,000	42	7	0	6,000	14.6	94	1,150,000	4.4
						15	44,000	44	35	0	5,130	11.9	77	81,000	2.4
						18	82,000	33	51	3	4,810	12.4	80	4,800	0.6
30 ♂	Diethylstilbestrol	5 mg.	17	85 mg.	Minimal fatty degeneration, predominantly central; moderate myelopoiesis, predominantly mature	1	9,950	68	9	0	5,370	12.9	84	1,300,000	0.4
						11	31,500	76	10	0	5,500	12.4	80	350,000	0.2
						17	93,000	53	36	2	4,950	11.9	77	19,000	0.2
33 ♀	Diethylstilbestrol	5 mg.	16	80 mg.	Moderate midzonal fatty degeneration; minimal myelopoiesis	1	13,350	69	11	0	5,240	15.8	102	1,020,000	0.2
						13	34,900	65	22	0	6,060	17.7	115	90,000	1.2
						16	85,500	58	22	15	4,420	11.7	76	0	0.2
31 ♂	Estradiol benzoate	1.6 mg.	20	32 mg.	Advanced central fatty and hydropic degeneration; slight myelopoiesis, predominantly mature	1	21,500	69	4	0	6,000	15.0	97	1,500,000	0.4
						12	39,000	61	11	0	6,040	12.2	79	480,000	1.8
						20	56,950	69	27	2	7,200	15.9	103	35,000	0.4
24 ♂	Estradiol benzoate	1.6 mg.	17	27.2 mg.	Minimal central fatty and hydropic degeneration, slight erythropoiesis; moderate myelopoiesis, predominantly mature	1	22,200	54	9	0	5,600	12.7	82	980,000	2.6
						8	44,700	65	16	0	5,080	12.3	79	609,000	2.0
						17	47,000	43	33	15	1,790	4.5	29	0	0.1
31 ♀	Estradiol benzoate	1.6 mg.	17	27.2 mg.	Slight shrinkage of hepatic cells centrally; minimal myelopoiesis, equal degree of mature and immature	1	21,800	65	5	0	5,030	13.4	86	905,000	0.0
						10	51,500	54	27	1	4,700	12.4	80	320,000	0.1
						17	83,000	42	36	8	2,000	4.9	31	4,000	0.0
29 ♂	Estrone	10 mg.	18	180 mg.	Slight central fatty degeneration; moderate myelopoiesis, predominantly mature	1	9,950	55	4	0	6,440	15.2	98	1,700,000	1.0
						13	24,000	52	17	1	6,320	15.0	97	100,000	1.0
						18	27,000	30	35	2	4,450	9.2	60	4,000	0.6
41 ♂	Estrone	10 mg.	22	220 mg.	Advanced central fatty and hydropic degeneration; moderate myelopoiesis, mature	1	19,500	68	7	0	6,520	15.5	100	1,600,000	4.6
						13	38,800	55	16	0	6,260	12.3	79	220,000	2.2
						19	45,000	56	30	4	5,200	12.6	88	0	0.2
40 ♀	Estrone	10 mg.	22	220 mg.	Slight central fatty degeneration; moderate myelopoiesis, mature	1	11,700	45	10	0	5,470	13.6	88	1,320,000	1.6
						13	36,800	45	23	4	5,080	12.4	80	210,000	2.4
						19	56,200	56	26	6	3,810	9.7	63	12,000	0.2
25 ♀	Diethylstilbestrol	(Oral) 20 mg.	33	660 mg.	Minimal central fatty degeneration; moderate erythropoiesis; minimal myelopoiesis, immature	1	20,350	47	10	0	5,600	14.2	92	970,000	4.4
						10	33,450	70	24	3	5,270	14.6	94	750,000	1.0
						21	63,000	44	40	5	3,940	10.0	65	35,000	0.6
						33	1,050	39	7	0	1,830	4.9	31	14,000	10.0
26 ♂	Diethylstilbestrol	(Oral) 20 mg.	33	660 mg.	Minimal diffuse fatty degeneration, slight erythropoiesis; moderate myelopoiesis, immature	1	15,150	42	5	0	5,300	13.0	84	1,300,000	3.2
						19	42,500	40	27	7	4,930	10.7	70	300,000	0.6
						31	16,350	63	13	1	3,810	8.0	52	38,000	3.0
						32	5,300	46	17	0	3,000	6.7	43	190,000	2.6

that estrone produces results indistinguishable in these respects from those following estradiol or diethylstilbestrol. The livers of animals receiving large doses of estrone or of estradiol benzoate showed definite changes which cannot be distinguished in type or degree from the hepatic changes produced by estrogenically equivalent doses of diethylstilbestrol dipropionate.

It must be emphasized that the doses of the estrogens used in these experiments are approximately twenty-five times as large per unit of body weight as the maximum therapeutic dose usually employed in treating patients. We * have not been able to detect by clinical estradiol produce hepatic changes indistinguishable from those produced by diethylstilbestrol.

SUMMARY

Large doses of the "natural" estrogens estrone and estradiol benzoate produce changes in the liver, bone marrow and peripheral blood of dogs indistinguishable from those produced by the synthetic estrogen diethylstilbestrol. Hepatic changes following estrogenically equivalent doses of the three estrogens consisted of fatty degeneration and hydropic degeneration. In general, alterations in the parenchymal cells were not widespread or prominent. Since these changes occurred before the appearance of any hemorrhagic state, they were presumably the result of direct action on the liver. Extramedullary myelopoiesis occurred within the livers of animals receiving these estrogens.

8. MacBryde, C. M.; Freedman, Harold; Loeffel, Ellen, and Castrodale, Dante: The Synthetic Estrogen Stilbestrol: Clinical and Experimental Studies, J. A. M. A. **115**: 440-443 (Aug. 10) 1940. MacBryde, C. M.; Castrodale, Dante; Loeffel, Ellen, and Freedman, Harold: The Synthetic Estrogen Diethylstilbestrol: Clinical and Experimental Studies: II, ibid. **117**: 1240-1242 (Oct. 11) 1941.

VERTIGO DUE TO OBSTRUCTION OF THE EUSTACHIAN TUBES

A CLINICAL STUDY BASED ON ONE HUNDRED AND THIRTY-FIVE CASES

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Vertigo caused by obstruction of the eustachian tubes is a distinct clinical entity which has received but scant attention both in the literature and in practice. My own experience in the treatment of 135 cases of this type has proved that many patients suffer unnecessarily the distressing symptoms of vertigo, nausea and vomiting, sometimes for long periods, because their physicians fail to recognize the cause and to institute the simple procedure of mechanical inflation of the eustachian tubes which would bring them relief.

The reason these cases are so consistently overlooked probably is that they are seen usually by the medical man or general practitioner, who is likely to think in terms of disturbances in the digestive, circulatory or nervous systems and hence to ignore the possibility that violent symptoms of dizziness, nausea and vomiting may be attributable to stenosis of the eustachian tubes.

Most of the references to vertigo of this type in the literature have been made in general discussions on vertigo due to various causes, but a number of authors, including Atkinson,[1] Baumoel,[2] Brand,[3] Scott,[4] Mollison [5] and Richey,[6] have listed eustachian obstruction or stenosis as one of the principal causes of vertigo. It is true, of course, that there are many other conditions which may cause vertigo, but since obstruction of the eustachian tube is one of the most obvious, and also the most easily corrected, every patient with symptoms of dizziness and nausea should be subjected to the therapeutic test of inflation of the tubes as a first step in a thorough clinical investigation. This procedure should be carried out only by an otolaryngologist who is skilled in the passing of eustachian catheters and bougies.

GENERAL CONSIDERATIONS

My records of the past few years include 135 cases of vertigo relieved by inflation of the eustachian tubes. In this series of patients 34 per cent were men and 66 per cent were women. Approximately half of the group were between 40 and 60 years of age. Eighty per cent were between 30 and 70, and the remaining 20 per cent were young or extremely aged.

The obstruction or stenosis of the eustachian tubes was associated with acute or chronic inflammation of the nasal sinuses or ears in a large proportion of cases. The condition was associated with head colds in 15 instances. Fifteen patients complained of a feeling of fulness in the ears, along with the vertigo. Tinnitus accompanied the vertigo in 53 instances, and 39 patients had some reduction of hearing. In 7 of these the disturbance in hearing was temporary. Only 2 patients had discharging ears. Tonsillitis was present in 2 cases. One case was associated with alcoholism.

The duration of the vertigo was variable. In some cases the symptoms had been present only a few days; in others, weeks, months and even years.

SYMPTOMS

Many of the patients in this series had been under treatment for long periods and had gone to numerous physicians to seek relief from nausea, poor appetite, so-called bilious attacks, constipation, nervousness and many other symptoms, which usually had been ascribed to digestive disturbances. I have seen 2 or 3 patients who had histories quite typical of peptic ulcer and had been under observation and treatment for this condition, with no relief. Later their distressing symptoms were completely controlled by reestablishment of the patency of the eustachian tubes.

The cases of insidious onset are the ones most likely to be overlooked. In these instances, because the gastrointestinal symptoms are predominant, the patients are likely to be subjected to various types of treatment over long periods for diseases of the digestive system.

When the onset of the symptoms of nausea and vertigo is sudden and severe, the diagnosis is more easily established, and, if the proper treatment is instituted promptly, the relief is striking and dramatic.

A typical instance in which the onset was sudden was that of a young physician, previously in good health, who was extremely dizzy and severely nauseated one morning as he attempted to get out of bed. He lay back in bed and found that every time he moved or tried to raise his head he was overcome by extreme nausea to the point of vomiting. He became alarmed about his condition and called Dr. James T. Ledman, who recognized the trouble and suggested that he come to my office for treatment. (Dr. Ledman is an internist who has frequently made the diagnosis in this series and has referred the patients to me for treatment.)

Because the patient was suffering from such extreme nausea, it was 12:30 before he could get to my office. He came in, assisted by his wife, carrying a large towel and an emesis basin. He was walking with his legs far apart and holding on to the wall. He was extremely pale and was perspiring profusely. After he was assisted to the chair, a catheter was passed into the eustachian tubes; this was followed by a bougie, and then slight air inflation. Only the right eustachian tube was obstructed, and when this was opened the patient moved his head from side to side and stared in amazement as he announced "Why, my dizziness is gone!" He rose from the chair immediately, stood up, turned a few times, and walked around the room, shaking his head from side to side, and still could elicit no vertigo. Then he said suddenly "I have a call to make at 12:30—I can still get there." And he rushed from the room.

There have been many other instances just as dramatic as this one. In fact, the physician who was the patient in the foregoing instance was responsible for referring the following patient, and this shows that the results can be just as striking when the symptoms have been present for a long period.

The patient was a man past 60 who had a moderate hypertension. He had been confined to his bed for six weeks because of vertigo and had difficulty at times

1. Atkinson, E. M.: Aural Vertigo, New York State J. Med. **37**: 553 (March 15) 1937.
2. Baumoel, Siegfried: The Clinical Interpretation of Vertigo, Ohio State M. J. **26**: 33 (Jan.) 1930.
3. Brand, G. B.: Aural Vertigo, J. Laryng. & Otol. **52**: 756 (Nov.) 1937.
4. Scott, Sydney: Observations on Vertigo, Practitioner **136**: 302 (March) 1936.
5. Mollison, W. M.: The Operative Treatment of Vertigo, Guy's Hosp. Rep. **85**: 361 (July) 1935.
6. Richey, deW. G.: Vertigo, West Virginia M. J. **33**: 389 (Sept.) 1937.

in retaining his food, because the effort of trying to sit up and eat frequently caused severe vomiting. Hence his physician asked me to go to his home, to carry out the treatment. A eustachian catheter, and then a bougie were passed, and the middle ear was inflated with a hand bulb. The right tube was patent, but the left was closed, and after it was opened the patient raised his head and said "My dizziness is gone!" Whereupon he got out of bed and walked around the room unassisted. This occurred three months ago, and the patient has had no recurrence of the dizziness since.

In some cases the onset of symptoms is fleeting. The patient may awake some morning and, in attempting to turn over in bed, notice a transitory dizziness. If he attempts to get out of bed suddenly, an attack of severe vertigo may ensue, so that he may have to steady himself or be assisted to keep from falling. Frequently in such instances, if the patient gets to his feet and stands still for a few moments with his eyes closed, the dizziness disappears, and then, with some care, he is able to go about his daily routine. Sudden change of position, such as stooping, however, may bring on the vertigo for several minutes. As the day goes on, the symptoms become less pronounced and the patient may be comparatively free from trouble during the day. For this reason a patient with this type of history does not seek relief until the condition becomes worse and he is incapacitated by it.

RECURRENCES

Although some patients in this series have apparently received permanent relief from only one inflation of the eustachian tubes, there have been many who had a recurrence of the same symptoms, which were again relieved by inflation of the eustachian tube. These recurrent attacks may be associated with acute head colds or exacerbations of a catarrhal condition or some irritation of the mucous membranes such as that caused by excessive smoking.

In some cases, in which the condition has progressed gradually over a long period, dilation of the eustachian tubes at regular intervals has proved necessary. Some patients have been treated regularly for two years or more. As an example, I have in mind a patient who was past 70 years of age. For a time he came in at regular intervals and was thus able to carry on his business and go to his office routinely. However, if he lapsed in his routine of treatment he would wake up a few mornings later to find that he was unable to get out of bed and would start vomiting severely. On several occasions it was necessary for me to go to his home to carry out the treatment. I have been called to his home and found him in a darkened room, flat on his back with ice cloths over his eyes, and any movement or attempt to talk would bring on severe retching. Yet after treatment he would be out of bed, dressed and on his way to his office within half an hour.

TREATMENT

As already indicated, the treatment consists in passing a catheter into the eustachian tube and then a bougie, followed by inflation with air. When this procedure is carried out with care and caution there is no danger of rupture of the tympanic membrane or trauma to the eustachian tubes. I have used the procedure thousands of times without ill effects of any kind.

Although the immediate aim in these cases is to establish the patency of the eustachian tube at once—and this must be done by the mechanical procedure outlined—it is also important to maintain the patency of the tube. In some cases this can be achieved only by repeated inflations, but in others a thorough investigation may reveal some underlying difficulty that can be corrected. Chronic sinus infections, chronic tonsillitis and ear infections may be causing or contributing to the obstruction of the eustachian tubes, and, if present, the proper measures should be taken to eradicate them.

Allergy is a factor in some of these cases, and the patency of the eustachian tubes can be maintained by removal of the offending allergen. As has been noted, 1 case in the series was associated with alcoholism. Many patients have experienced great improvement by moderation or elimination of smoking. Abstinence from tobacco is always advisable in these cases.

It is also worth while to investigate the basal metabolic rate of patients with recurrent vertigo due to eustachian obstruction. A significant number have a low metabolic rate, and the patency of the eustachian tubes is improved or maintained when thyroid is administered.

COMMENT

Although my purpose in this presentation is to discuss the clinical manifestations and treatment of obstruction of the eustachian tubes, a word may be added concerning the probable mechanism by which the symptoms are produced. It seems obvious that obstruction of the eustachian tube somehow disturbs the air pressure and causes stimulation of the perilymph, which interferes with normal balance as maintained by the labyrinthine mechanism.

Vertigo is caused in most cases, and perhaps in all, by unilateral eustachian obstruction. The obstruction was recorded as bilateral in approximately one third of the cases I have observed, but it may be that the pressure disturbance in these cases was unequal on the two sides. In another third of the cases the obstruction was unilateral, and in the remaining third one side was more completely obstructed, or the obstruction occurred on alternate sides in different attacks and hence could be regarded as unilateral. Scott [4] noted in the examination of aviators during the war that when it was found that both eustachian tubes were inefficient and both tympanic membranes were compressed inward there was deafness without vertigo but that when only one eustachian tube was obstructed vertigo was prominent, owing to heterogeneous stimuli. Richey [6] noted similar observations on pilots who had attacks of vertigo and nausea, after high flying, due to unilateral obstruction of the eustachian tube.

I have made an interesting observation in several instances during the treatment of these patients which proves quite conclusively that the vertigo and nausea are the direct result of the eustachian obstruction. In some instances in which there was marked obstruction it has been possible to reproduce severe attacks of vertigo during inflation, and these have been relieved promptly by passing a bougie to allow air to escape from the middle ear and thereby to relieve the increased pressure produced by inflation. From this it would appear that the perilymph is disturbed by abnormal variations in pressure, either increased or decreased.

In many of the cases it has been noted that the staggering is in the direction of the obstructed side, although this has not been invariably true, according

to my observations. At any rate the direction of the gait furnishes a clue as to the side which may be affected.

SUMMARY

Vertigo caused by obstruction of the eustachian tube is a distinct clinical entity which is often overlooked. An experience in the treatment of 135 cases of this type has proved that distressing symptoms of vertigo, nausea and vomiting, sometimes present for long periods, can be relieved by mechanical inflation of the eustachian tubes. Since obstruction of the eustachian tube is one of the most obvious and also the most easily corrected causes of vertigo, every patient with dizziness and nausea should be subjected to the therapeutic test of inflation of the tubes as a first step in a thorough clinical investigation.

In this series approximately two thirds of the patients were women. Approximately half were between 40 and 60 years of age. The obstruction of the eustachian tubes was associated with acute or chronic inflammation of the nasal sinuses or ears in a large proportion of cases. The duration of the symptoms varied from a day or two to several years.

The symptoms may be of sudden onset or the condition of vertigo may develop gradually and intermittently. In the latter type the true cause of the difficulty is often overlooked and the patients are subjected to a variety of treatments for supposed disorders of the digestive system which yield no benefit.

Some patients are relieved permanently by only one or two inflations of the eustachian tubes; in other cases, the symptoms recur and may again be relieved by reestablishing the patency of the eustachian tube. In addition to the mechanical procedure of inflation, proper treatment of these patients demands attention to chronic sinus infections and chronic tonsillitis, to possible allergic factors and irritants, such as tobacco, and an investigation of the basal metabolic rate.

The vertigo is caused in most instances, and perhaps in all, by unilateral eustachian obstruction or by more complete obstruction on one side than the other. The direction of the gait furnishes a clue to the side which may be affected, for in most of the cases the staggering is in the direction of the obstructed side.

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Energy Metabolism.—Accurate measurements by means of the calorimeter have shown that the average total metabolism of a man sitting still is about 100 calories per hour; while the same man working actively increases his metabolism up to about 300 calories per hour; and a well trained man working at his maximum capacity metabolizes material enough to liberate 600 calories per hour, i. e. his metabolism may be six times as active during the hours actually spent in such work as when he is at rest. If during twenty-four hours a man works as hard as this for eight hours and spends two hours in such light exercise as going to and from work, his food requirement for the day will be somewhat over 6,000 calories, or three times the maintenance requirement. Thus, work may increase the day's metabolism as much as 200 per cent, whereas liberal feeding at the end of a fast was found to increase the metabolism only 22.5 per cent, or one ninth as much. Only a few exceptional occupations, such as that of lumbermen, for example, involve such heavy work as to cause a metabolism of 6,000 calories per day. More often the man who works eight hours a day at manual labor will increase his metabolism by 1,000 to 2,000 calories above what is needed for maintenance at rest, making his total food requirement 3,000 to 4,000 calories.—Sherman, Henry C.: Chemistry of Food and Nutrition, New York, Macmillan Company, 1941.

APPENDICAL PERITONITIS

EXPERIMENTAL AND CLINICAL INVESTIGATIONS INTO THE CAUSES OF THE HIGH MORTALITY

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The most effective means of reducing the high mortality of appendical peritonitis is the prevention of perforation of the acutely inflamed appendix by teaching the public the dangers of taking laxatives and delaying hospitalization in the presence of abdominal pain. These investigations have already been reported under the prophylactic aspect of the Philadelphia plan.

The scientific aspect presented here includes experimental and clinical research to develop an improved management of patients suffering with spreading peritonitis and to provide continuous research toward further improvement.

The dog has proved to be well adapted for experimental investigations because:

Peritonitis similar to that observed complicating acute appendicitis in man can be induced in the dog by ligating the mesentery and the base of the appendix and administering castor oil immediately after operation.[1]

Gross tissue reactions in the dog following the induction of gangrene of the appendix are similar to those observed in gangrenous appendicitis in man.

Changes in the cellular content and chemical composition of the blood and peritoneal exudate preceding rupture and development of the localizing or spreading process are similar in man and dog.

Symptoms and signs accompanying micro-organismal invasion of the peritoneal cavity are likewise similar in the two species.

Recovery from spreading peritonitis in man is preceded or accompanied by the development of an abscess. The dog that recovers from induced spreading peritonitis also develops an abscess which is absorbed.

Death occurs in both man and dog because the reactive capacity of their tissues to the micro-organismal invasion is inadequate.

As these similarities were recognized, the practicability of using the reactions in the dog to measure the value of different methods of management of appendical peritonitis in man became evident. Variables are few. The incidence and mortality of peritonitis in dogs could be varied by withholding or changing the time of administration or the amount of laxatives following ligation of the appendix: without administration of a laxative, 50 per cent of the dogs recovered after an appendical abscess had developed; when 30 cc. of castor oil was given twenty-four hours after operation 68 per cent died; when 60 cc. of castor oil was given immediately after operation 91 per cent died.

Of the patients admitted to hospitals in Pennsylvania with a diagnosis of acute appendicitis or appendical peritonitis, 3,427 had not received laxatives and only 1 in 62 died; 5,868 had taken one laxative and 1 in 19 died; 921 had taken more than one and 1 in 9 died.

From the Foundation for Clinical and Surgical Research and the Philadelphia General Hospital.
The authors received assistance from Dr. J. H. Clark, Chief of Laboratory, and J. G. Reinhold, Ph.D., of the Philadelphia General Hospital.

1. Bower, J. O.; Burns, J. C., and Mengle, H. A.: Induced Spreading Peritonitis Complicating Acute Perforative Appendicitis, Surg., Gynec. & Obst. 66: 947-961 (June) 1938.

Man and dog react similarly to surgical procedures instituted in the presence of localizing or spreading peritonitis. Dogs invariably die soon after operations performed during the active stages of an induced peritonitis, and death occurs earlier and more frequently in man when removal or attempted removal of the appendix is instituted before the peritoneal infection becomes localized.[2]

Likewise, the investigations of agents for combating the toxemia of spreading peritonitis showed that those which produced the lowest mortality in dogs reduced the mortality in man in the same degree when the method of administration and dose were the same.[3]

Of the 180 dogs treated for induced peritonitis, the lowest mortality was obtained in the group treated with lyophilized serum obtained from the blood of dogs recovered from spreading peritonitis.[1] A group of patients treated identically with lyophilized convalescent peritonitis serum showed a decided improvement over any other form of treatment. That the cellular elements of the blood played little or no part in their improvement is shown by the fact that dogs with spreading peritonitis treated with direct transfusions of whole blood showed no improvement. In fact, in one such group the mortality was even higher than in the untreated group.[3]

We had used lyophilized convalescent peritonitis serum from 1935 to 1940, at which time we changed to lyophilized plasma in the treatment of spreading peritonitis in man, thereby eliminating delay and technical difficulties. It can be given immediately after the diagnosis has been made. Pooling diminishes reactions, and we have kept ampules of plasma at room temperature as long as fifteen months. Mahoney,[4] Bond and Wright,[5] Strumia, Wagner and Monaghan[6] and Levinson, Neuwelt and Necheles[7] have reported the therapeutic use of preserved plasma in the treatment of shock and infections.

TABLE 1.—*Physiologic Responses of Man and Dog with Similar Pathologic Conditions*

	Pathologic Condition		Total Protein	Albumin	Albumin/ Globulin	Chloride
Of Man						
B. S.	Acute catarrhal appendicitis	Blood	7.5	5.2	2.2	
		Peritoneal exudate	5.7	4.1	2.5	
E. K.	Appendix gangrenous, serous coat intact	Blood	7.0	4.5	1.8	575
		Peritoneal exudate	6.3	4.5	2.5	545
V. K.	Spreading peritonitis, perforating duodenal ulcer	Blood	6.6	3.7	1.3	605
		Peritoneal exudate	3.8	2.4	1.7	645
Of Dog						
No. 39	Appendix gangrenous, localizing process	Blood	7.1	4.1	1.4	670
		Peritoneal exudate	6.2	3.8	1.6	655
No. 93	Appendix gangrenous, localizing process	Blood	7.7	4.2	1.2	620
		Peritoneal exudate	7.0	4.2	1.5	620

Following the intramuscular injection of lyophilized convalescent peritonitis serum we observed that intestinal peristalsis occurred earlier than with any of our previous forms of treatment. Later, however, when lyophilized convalescent plasma was given intravenously

TABLE 2.—*Observations in a Case of Appendical Peritonitis*

Date	Hemoconcentration	Hemoglobin	Protein	Albumin	Albumin/ Globulin	Chlorides	Carbon Dioxide
5/27/41	47.5	15.5	7.0	4.4	1.7	550	54
5/28/41	31.6	12.2	4.8	3.0	1.6	500	58

	Hemoglobin	Red Cells	Leukocytes	Myelocytes	Juveniles	Stab Cells	Segmented Cells	Lymphocytes	T. Polymorphonuclears
5/27/41	103%	5,350,000	7,000	0	0	12%	63%	75%	25%

peristalsis returned even earlier and, in addition, its return was followed by the spontaneous evacuation of intestinal contents, occasionally at the end of eight and not infrequently within twenty-four hours after administration. Investigations by one of the members of our group to determine the cause of this early return of intestinal tonus showed that peritonitis induced in the dog by the method described [3] is followed by a loss of plasma and blood volume with attendant loss of plasma protein and electrolyte. Dependent on the degree of loss of plasma there is an early increase in the concentration of the cellular elements of the blood. Fluid present in the peritoneal cavity contains large amounts of plasma protein and accounts for most of the loss of plasma. The most acute changes occur within twenty-four to seventy-two hours after operation. Following this critical stage of the infection there is an extended period of anemia.

In man, changes almost identical with those observed in the dog occur in the blood and the composition of the peritoneal exudate in perforative appendicitis and in the localizing process [8]—early appendical rupture quarantined by fibrinous plaques or mesentery, or loops of intestine cemented together with plastic exudate.

Table 1 shows not only the similarity of these changes but that pathologic changes of similar character in both man and dog evoke similar physiologic responses.

In patient E. K., with gangrene of the appendix, and in dogs 39 and 93, the total protein and albumin contents in the blood and peritoneal exudate were almost identical. In both dogs the process had gone one step further than in patient E. K.—the serous coat of the appendix had perforated but the process had been walled off with omentum and loops of intestine cemented together with plastic exudate—the localizing process.

The concentration of the cellular elements and the chemical changes in the blood and peritoneal exudate in the dog have been studied in detail and reported.[9]

Hemoconcentration with associated changes in the plasma protein is observed early in appendical peritonitis and is illustrated by the following:

J. M., a man aged 28, admitted with symptoms and signs of spreading peritonitis of seventy-two hours' duration, had a temperature of 103 F., a pulse rate of 106 and a respiratory

2. Bower, J. O.: Clinical and Surgical Aspects of Spreading Peritonitis Complicating Acute Perforative Appendicitis, Minnesota Med. **23**: 755 (Nov.) 1940.

3. Bower, J. O.; Burns, J. C., and Mengle, H. A.: Spreading Peritonitis Complicating Acute Perforative Appendicitis, Experimental Studies, Arch. Surg. **37**: 731-759 (Nov.) 1938.

4. Mahoney, E. B.: A Study of Experimental and Clinical Shock with Special Reference to Its Treatment by the Intravenous Injection of Preserved Plasma, Ann. Surg. **108**: 174 (Aug.) 1938.

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rate of 28. Perforation had occurred four hours before admission. Despite septicemia produced by Escherichia coli, the patient recovered following the administration of 1,750 cc. of lyophilized peritonitis plasma.

COMMENT

The blood changes occurring in acute appendicitis and appendical peritonitis in man and dog are similar to those observed in shock. Blalock,[10] in his investigation of the relationship of the local loss of fluid and low blood pressure, showed that the protein content of the fluid which accumulated and escaped through the wall of the intestine of dogs, accompanying shock induced by intestinal trauma, was practically identical with plasma. Patients suffering with the shock syndrome here described present a somewhat different picture from that which surgeons encounter in the terminal stages of a spreading peritonitis. Increased permeability of capillaries is a common accompaniment of shock and escape of fluids from damaged capillaries can be readily understood. Nerve impulses are believed by O'Shaughnessy and Slome[11] to play an important part in the causation of shock. The passage of fluid into the peritoneal cavity in cases of appendical peritonitis may be the result of absorbed bacterial antigens acting on terminal ganglions.

We have reported the finding of the antitoxin to Clostridium welchi in the peritoneal exudate of a patient operated on for a localizing process. The patient's blood serum also showed the presence of antitoxin to Clostridium welchi.[12]

We believe that the passage of fluid from the vascular system into the peritoneal cavity in preperforate appendicitis and appendical peritonitis is definitely a protective process. To view it otherwise, one must admit that the absence of peristalsis, the presence of plastic exudate between loops of intestine and omentum cementing them together or of antibodies in the blood stream are not protective. If these deductions are correct, then plasma taken from patients recovered from an attack of appendical peritonitis should have more therapeutic value than plasma taken from normal persons. Soon after we started using lyophilized plasma the full significance of the changes in blood composition became apparent. However, additional clinical and experimental investigations will be necessary to determine the relative therapeutic value of lyophilized convalescent peritonitis plasma as compared with lyophilized normal plasma. The following deductions regarding the results of our clinical experience with lyophilized convalescent peritonitis plasma to date may be helpful to those interested in this problem:

INDICATIONS AND CONTRAINDICATIONS FOR THE USE OF LYOPHILIZED CONVALESCENT PERITONITIS PLASMA

Plasma is indicated when a distended, purulent, gangrenous appendix ruptures at operation; when a perforated appendix is unexpectedly found at operation; when a frank spreading peritonitis is present on the patient's admission to the hospital; when an induced spreading peritonitis develops following the search for or removal of an appendix in the presence of a localizing process or an appendical abscess; when spreading peritonitis is induced postoperatively;[1] when peritonitis develops as a result of ruptured duodenal, stomach or typhoid ulcers, perforation of the gallbladder, intestinal obstruction, salpingitis, abdominal trauma, and like conditions.

The initial amount given intravenously over a period of two hours has been 250 cc., except when an appendix ruptures on removal or for any other reason the patient has been subjected to an extremely large dose of antigen, under which conditions 500 cc. has been given. While the patient's pulse, temperature and the presence or absence of peristalsis are guides to further administration of plasma, protein determinations are also necessary and should be made ten hours after each dose. If symptomatic improvement does not occur, the dose should be repeated at twelve hour intervals until there is improvement. If there is no change in total protein and an improvement of symptoms continues, plasma is withheld.

In addition to plasma, the Fowler position, absolutely nothing by mouth, the parenteral administration of dextrose in saline solution or distilled water, depending on the level of plasma chloride, and morphine hypodermically are advised. Drugs that stimulate peristalsis should not be given at any time. Blood transfusions should not be given during the first forty-eight hours because of early hemoconcentration. Laboratory work will indicate later requirements.

Plasma is contraindicated for patients coming to operation with an unruptured appendix unless symptoms and signs of a peritonitis develop; for moribund patients unless the physician in charge believes that this type of patient should be "given a chance." Then a small blood transfusion is advised and, if the patient reacts, plasma may be administered, alternating with small transfusions. Facilities should be available for protein and hematocrit determinations.

OBSERVATIONS ON THE RESULTS OF THE ADMINISTRATION OF LYOPHILIZED CONVALESCENT PERITONITIS PLASMA

We have not observed as decided a psychic improvement from the administration of any agent in peritonitis as that which follows the intravenous injection of convalescent peritonitis plasma. We mention this first because in our experience it has been the initial change—patients voluntarily comment on how much better they feel. Restlessness and mental irritability diminish or disappear and delirium rarely develops.

Reduction in pulse rate and a drop in temperature are usually gradual in the case of severe involvement but not infrequently precipitous in the case of moderately severe involvement. In a previously silent abdomen peristaltic sounds have been heard as early as eight hours. Rigidity has diminished concomitantly in the quadrants in which peristalsis has returned.

We cannot state definitely the part that antibodies play in the improvement in symptoms and signs noted. The accurate replacement of fluids and electrolytes in quantities that approach as nearly as possible the patient's requirements is extremely important.

SUMMARY

Induced peritonitis in the dog produces tissue and body fluid changes similar to those observed in cases of appendical peritonitis in man, making possible the evaluation of agents used to combat the toxemia.

Preperforative appendicitis and appendical peritonitis in man and induced peritonitis in dogs show blood and body fluid changes similar to those observed in cases of shock.

10. Blalock, Alfred: Trauma to Intestines: Importance of Local Loss of Fluid in Production of Low Blood Pressure, Arch. Surg. **22**: 314 (Feb.) 1931.
11. O'Shaughnessy, Laurence, and Slome, David: Etiology of Traumatic Shock, Brit. J. Surg. **22**: 589 (Jan.) 1935.
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The intravenous administration of lyophilized convalescent peritonitis plasma is advised in the treatment of patients suffering with appendical peritonitis.

The best management of these patients or of patients suffering with peritonitis from any cause can be carried out only with the aid of a competent clinical biochemist, on whose determinations the institution of therapy in great part depends.

Blood transfusions should be replaced by infusion of human plasma in the early stages of peritonitis.

The convalescent stage of peritonitis is accompanied by hypoproteinemia and anemia.

Lyophilized convalescent peritonitis pooled plasma makes immediate administration possible and diminishes the likelihood of reactions, and the lyophilization does not affect the specific antibody content of plasma.

CONCLUSION

A prophylactic plan for the reduction of the mortality of appendical peritonitis, which has proved workable in Pennsylvania, has been presented; we here suggest to surgeons a plan of management of this disease the rationale of which we believe to be sound.

NOSE DROP CONTAMINATION IN DROPPER BOTTLES

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What lurks in dropper bottles besides nose drops has long been a subject of discussion. By "dropper bottle" is meant the standard type of dropper attached, screw capped bottle wherein the dropper hangs submerged in the solution. The patient purchases a dropper bottle of solution of one of the common vasoconstrictors, treats his cold, then puts the bottle away in the family medicine cabinet. It is brought out thereafter when any member of the household has a stuffy nose. The dropper is inserted into the offending nostrils and is then put back into the bottle. Usually the dropper has been inserted well into the nostrils; therefore the questions arise of nose drops being a possible source of transmission of infection from one member of the family to another and of a future "cold" being complicated by the use of nose drops contaminated from a previous "cold."

Most persons would not think of borrowing another person's toothbrush, but perhaps nose drops in dropper bottles are cleaner than toothbrushes and won't support living bacteria. Therefore the following examinations of the contents of dropper bottles were made in the clinical laboratories of Peralta Hospital.

Eight unused, regularly prescribed dropper bottles of solutions for intranasal use were obtained from the hospital pharmacy (table 1). All solutions contained a preservative in small amount or were rich in aromatics. All were cultured aerobically and anaerobically and no growth appeared at the end of ninety-six hours. Fresh unused samples were then inoculated with twenty-four hour broth subcultures of Staphylococcus aureus hemolyticus and no growth appeared at the end of ninety-six hours, even after a second inoculation. Then rabbit blood-agar plates were inoculated with broth cultures of the same organism and four hours later, before a visible growth had occurred, the plates were flooded with the solutions from dropper bottles. At the end of twenty-four hours a luxurious growth of Staphylococcus aureus appeared almost equal to the control plates that were not flooded with the solutions.

Thus it would appear that vasoconstrictor solutions in dropper bottles are probably sterile as dispensed by the pharmacist. Such solutions resist bacterial growth either by slight inhibition or by failure to provide sufficient nutrient material. As no bactericidal effect was demonstrated, lack of nutrient material is the more likely. Bacteriostatic effects were almost negligible.

Contents of dropper bottles known to have been used by one or more persons for at least one week were now examined. Nineteen samples were collected from as many medicine chests. Seven of these were commercial ephedrine solutions; twelve were of neosynephrin. All contained a preservative or aromatics. All yielded bacterial growth on culture (table 2).

Apparently repeated passage of the dropper from nostril to solution had succeeded in each instance in establishing bacterial growth. The explanation might be the addition of mucus, pus and débris to the solution as nutrient material, or it might be that bacteria continued to live within the added particles out of reach of the slight concentration of antiseptic in the surrounding solution.

As significant as any of these observations, however, and with the additional importance of probably supplying one answer to the problem, was the following:

Six samples from bottles containing physiologic solution of ephedrine without any antiseptic or dropper but with plain screw caps showed no bacterial growth on culture. These were bottles from separate medicine cabinets, and in all instances the contents had been partly used. But in no instance had a dropper been

TABLE 1.—*Composition and Result of Culture of Unused Stock Solutions of Nose Drops as Dispensed*

No.	Vasoconstrictor Agent	Vehicle	Preservative	Aromatics	Organism Found in Culture
1	Ephedrine 1%	Oil	Merthiolate 1:5,000	Oil of thyme, camphor, menthol	None
2	Ephedrine 1%	Oil	None	Camphor, menthol, wood turpentine, oil of eucalyptus, cedar leaf, thymol, methyl salicylate	None
3	Ephedrine 1%	Aqueous dextrose	Merthiolate 1:5,000	None	None
4	Neosynephrin 0.25%	Aqueous	Sodium benzoate 0.1%	None	None
5	Neosynephrin 0.25%	Aqueous	Sodium benzoate 0.1%	None	None
6	Neosynephrin 0.25%	Aqueous	Sodium benzoate 0.1%	None	None
7	Neosynephrin 0.25%	Aqueous	Sodium benzoate 0.1%	None	None
8	Ephedrine 1%	Aqueous dextrose	Metaphen 1:5,000	None	None

introduced into the bottle. In all instances portions had been removed only by unscrewing the cap, pouring out an amount needed for treatment and replacing the cap.

COMMENT

The question of sterility of solutions for intranasal use is important and there is an answer. The answer does not lie in avoiding the issue by the use of stronger

antiseptics. It lies in sterile solutions correctly dispensed and correctly used. Nor can medical practice make one grand effortless leap from the era of antisepsis to a new era of asepsis. Such change requires appropriate increases in education, instruction and care.

TABLE 2.—*Composition of Nose Drops Examined and Organisms Found on Culture* *

No.	Vasoconstrictor Agent	Vehicle	Preservative	Aromatics	Organism Found in Culture
1	Ephedrine 1%	Oil	Merthiolate 1:5,000	Oil of thyme, camphor, menthol	Staphylococcus albus
2	Ephedrine 1%	Aqueous dextrose	Merthiolate 1:5,000	Present, not itemized	Streptococcus viridans, Staphylococcus albus
3	Ephedrine 1%	Aqueous dextrose	Merthiolate 1:5,000	Present, not itemized	Hemolytic Staphylococcus aureus
4	Ephedrine 1%	Aqueous dextrose	Merthiolate 1:5,000	Present, not itemized	Hemolytic Staphylococcus aureus
5	Ephedrine 1%	Aqueous dextrose	Chlorobutanol 0.5%	Menthol	Staphylococcus albus, Streptococcus gamma, Monilia albicans, M. catarrhalis
6	Ephedrine 1%	Oil	None	Camphor, menthol, wood turpentine, oil of eucalyptus, cedar leaf, thymol, methyl salicylate	Hemolytic Staphylococcus aureus, Streptococcus gamma
7	Ephedrine 1%	Aqueous dextrose	Metaphen 1:5,000	None	Staphylococcus aureus
8	Neosynephrin 0.25%	Aqueous	Sodium benzoate 0.1%	Eucalyptol, menthol	Hemolytic Staphylococcus aureus
9	Neosynephrin 0.25%	Aqueous	Sodium benzoate 0.1%	Eucalyptol, menthol	Hemolytic Staphylococcus aureus
10	Neosynephrin 0.25%	Aqueous	Sodium benzoate 0.1%	Eucalyptol, menthol	Hemolytic Staphylococcus aureus
11	Neosynephrin 0.25%	Aqueous	Sodium benzoate 0.1%	Eucalyptol, menthol	Hemolytic Staphylococcus aureus
12	Neosynephrin 0.25%	Aqueous	Sodium benzoate 0.1%	Eucalyptol, menthol	Hemolytic Staphylococcus aureus
13	Neosynephrin 0.25%	Aqueous	Sodium benzoate 0.1%	Eucalyptol, menthol	Hemolytic Staphylococcus aureus
14	Neosynephrin 0.25%	Aqueous	Sodium benzoate 0.1%	Eucalyptol, menthol	Hemolytic Staphylococcus aureus
15	Neosynephrin 0.25%	Aqueous	Sodium benzoate 0.1%	Eucalyptol, menthol	Hemolytic Staphylococcus aureus
16	Neosynephrin 0.25%	Aqueous	Sodium benzoate 0.1%	Eucalyptol, menthol	Hemolytic Staphylococcus aureus
17	Neosynephrin 0.25%	Aqueous	Sodium benzoate 0.1%	Eucalyptol, menthol	Hemolytic Staphylococcus aureus
18	Neosynephrin 0.25%	Aqueous	Sodium benzoate 0.1%	Eucalyptol, menthol	Hemolytic Staphylococcus aureus
19	Neosynephrin 0.25%	Aqueous	Sodium benzoate 0.1%	Eucalyptol, menthol	Hemolytic Staphylococcus aureus

* All of these solutions were used at least one week.

Perhaps it does not make any difference to a person if he repeatedly uses his contaminated nose drops during that particular infection. But in his next cold the complicating organism may be a different one and the instillation of the first type of bacteria on a weakened mucous membrane may add to the patient's complications.

Staphylococci themselves may not cause actual disease of the upper respiratory tract if the mucous membrane is healthy; however, staphylococci may complicate another type of infection by synergistic action. The presence of staphylococci in nose drops may also indicate other contamination such as virus. No study was made of the possibility of virus growth in nose drops in this investigation. Surely it is a possibility that should not be overlooked.

In the series of samples tested, there were various preservatives and antiseptics used. These did not prevent bacteria from living in the nose drops. If a sufficient concentration of preservative or antiseptic was added to keep the drops sterile, the drops would be irritating and harmful to the mucous membrane of the nose.

The main purpose of this paper is to condemn two practices that are widespread among the public and are at times fostered unintentionally by physicians. These are (1) the use by a patient of some one else's dropper bottle of nose drops and (2) the use by a patient of dropper bottle nose drops that he has used during a previous infection of the upper respiratory tract.

In order to avoid the complications of these practices, the physician should educate his patients to do one of two things: If they insist on buying dropper bottles of solution, they should buy very small ones, allow no one else to use them and throw them away at the conclusion of their current infection.

However, the safer and better method is to buy sterile nose drops containing no antiseptic, in a plain screw cap bottle. Instruction is given to pour out the amount needed for treatment and replace the screw cap at once, never pour anything back into the original bottle and never put a dropper or anything else into it. This is the practice advocated by Parkinson.[1]

Even with the few instances involved in this investigation, certain conclusions can be drawn that are highly significant in relation to present customs of dispensing and using vasoconstrictor solutions for intranasal application.

SUMMARY

1. Fresh nose drops as they are dispensed are probably sterile.

2. The usual content of preservative or antiseptic is insufficient to maintain sterility in the face of repeated contamination.

3. Many popular intranasal vasoconstrictor solutions have no bactericidal effect on Staphylococcus aureus hemolyticus.

4. Repeated contamination of nose drops results in their supporting living bacteria. This probably is due to the addition of mucus and other débris from the nose.

5. The use of contaminated dropper bottle contents by others, or in subsequent colds, is not without risk.

6. Since sufficient antiseptic to insure sterility under circumstances of repeated contamination would make a solution unfit for intranasal use, owing to discomfort and mucosal irritation and damage, the way to progress would seem to be toward solutions prepared, sold and used in such manner as to avoid contamination.

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1. Parkinson, S. N.: Preparation of a Physiologic Solution for Nasosinal Treatment, Arch. Otolaryng. **32**: 959 (Nov.) 1940.

THE GRID FOR EVALUATING PHYSICAL FITNESS (WETZEL)

APPLICATION TO CHILDREN WITH ABNORMAL BODILY DIMENSIONS

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In a recent publication Wetzel[1] described a new method for evaluating physical fitness which permits the estimate of different aspects of the physical progress of a child from infancy to maturity. The assessment is based on the use of a grid and demands only three simple routine measurements, namely height, weight and age. Wetzel enumerates eight different items which may be determined from the grid: physique (body build), developmental level, nutritional grade, physical status, relative advancement or retardation, maturation, basal heat production and daily caloric intake. The technic is described in detail in the original publication and will not be repeated in this paper. The different aspects are explained by illustrative examples. Yet no examples are given which show the interrelation of the different aspects in the same individual, specifically not in individuals with abnormal bodily dimensions.

The present report is intended to illustrate the application of the grid to children in whom one or more of the basic measurements is distorted. Since in this department records of more than 200 obese children, with relevant measurements, are available, the discussion will concern itself chiefly with findings in obese children. Cases of pronounced undernutrition and of retardation or acceleration of statural growth are included for contrast. The value of the method for recognition of abnormal physical status and for evaluation of therapeutic results could be confirmed. However, some limitations of the method, which were not clarified in the original report, have been observed. For simplification the eight aspects recorded by Wetzel will be discussed under three different headings: (1) height-weight relationship (including physique, nutritional grade and physical status), (2) developmental achievement (including developmental level, relative age advancement or retardation and maturation) and (3) basal metabolism (basal heat production and daily caloric intake).

HEIGHT-WEIGHT RELATIONSHIP

The construction of the grid permits the recording of height and weight by a single point. The area of normal progress is divided into several channels. If subsequent measurements follow the course of one of the established channels it may be concluded that the child is healthy and is progressing normally. The body build of a child determines the particular channel along which his growth line progresses. Abnormal increase in weight expresses itself in an upward trend of the line, or deviation toward the left. Malnutrition is indicated by a lowering of the line, or a bending toward the right side of the grid. Wetzel describes extensively the usefulness of the grid for the early detection of developing obesity or malnutrition. The value of the new method could be fully confirmed in a large group of children with abnormal nutritional status. The graphic registration on the grid appears to be of particular value in detecting sudden changes in the height-weight relationship and will thus lead to an early investigation of the disturbing factors.

By plotting a number of cases which had been followed for several years, the value of the grid for a quick evaluation of the result of treatment could be demonstrated. Since obesity generally requires long-continued supervision and since a certain increase in weight is to be expected in a growing child, the appraisal of the progress of an obese child is sometimes difficult. It is only in the decidedly overweight child that actual reduction of weight is indicated. In less severe cases it may be sufficient to keep the weight stationary or even to allow a slight increase in weight. By transferring the figures to the grid, one can readily recognize whether or not a child is outgrowing his obesity. A slope of the line smaller than the slope of the grid indicates satisfactory progress and improvement of the condition. A parallel curve of the line or a slope larger than that of the grid is an index that the condition is stationary or is becoming worse. The grid thus offers a convenient guide for the evaluation and adjustment of treatment in children with abnormal nutrition.

DEVELOPMENTAL ACHIEVEMENT

The channels indicating height and weight progress are subdivided by so-called developmental lines. These lines are related to standard schedules of developmental progress ("auxodromes"). Comparison of the developmental level of a subject to the 67 per cent (or normal) auxodrome permits, according to Wetzel, a "simple, entirely objective," way of determining "developmental age." This measurement is claimed to be comparable to the skeletal age. Wetzel emphasizes that the new method avoids the disadvantages connected with roentgenographic determinations of skeletal age. However, he gives no figures which demonstrate the validity of this claim in children with abnormal bodily dimensions. A comparison of the developmental level, determined from the grid, and of the skeletal age, as measured by the traditional roentgenographic method, must show a good agreement before one is justified in replacing a well established, though tedious, method by a new and simpler one.

The accompanying tables show the result of such a comparison. Table 1 lists observation in 25 obese boys, and table 2 in 20 obese girls. The figures are intended to give the range of variation with regard to age and degree of obesity. The first difficulty in rating the patients according to the grid technic arises from the circumstance that many of the older and decidedly obese children fall outside the range which can be assessed from the grid. There are only 2 girls of more than 9 years who could be included; they were the shortest obese girls of this age period. The values of all other obese girls of more than 10 years fell above the developmental line 147, which is the highest value which may be related to the 67 per cent or normal auxodrome. Many of the older boys had also to be rejected because their height and weight gave them a developmental level above 170, which is approximately the highest value which can be expressed as developmental age.

In tables 1 and 2 are recorded the age, height and weight of the children together with their skeletal age. The assessment of the skeletal age was made from

From the Department of Pediatrics, Columbia University College of Physicians and Surgeons.

1. Wetzel, N. C.: Physical Fitness in Terms of Physique, Development and Basal Metabolism, J. A. M. A. 116:1187 (March 22) 1941.

roentgenograms of the hands and wrists according to the standards of Todd.[2]

The "developmental age" was assessed according to Wetzel's description as the age that corresponds to the 67 per cent auxodrome. "Height age" was similarly determined by plotting the height in the median channel and referring it from there to the 67 per cent auxodrome. The figures for height age enclosed in parenthesis have been assessed from the height charts of Burgess [3] because the values fell below the range of the 67 per cent auxodrome. "Per cent overweight" refers to the difference between observed weight and expected weight, the latter being taken as the weight which, according to the grid, corresponds to the height in the median channel.

A glance at tables 1 and 2 shows that little agreement exists between the "skeletal age," according to the roentgenographic method, and the "developmental age," according to the grid. In all instances the developmental age gives a much higher value, sometimes more than twice the value of the observed skeletal age. The discrepancies between the different determinations is illustrated in chart 1. The abscissa refers to the chronologic age, the ordinate refers to height age, skeletal age and developmental age, each of which is plotted above the chronologic age for each child. The 45 degree line indicates equality between chronologic age and the determined growth achievement. The majority of values fall above this line, indicating accelerated physical development in obese children.[4] The values for height and skeletal age fall generally within two or three years of the chronologic age. The height development is on the average somewhat more accelerated than the skeletal maturation. But the two values fall within the same zone, indicating a proportional acceleration of development in obese children.

The values for "developmental age" calculated according to the grid lie well above the values for height and skeletal development and are out of proportion with the actual biologic development of the child. The discrepancy is the more pronounced the higher the per-

TABLE 1.—*Obese Boys*

Number	Initials	Age	Height, Inches	Weight, Pounds	Skeletal Age	Calculations from Wetzel's Grid			Difference (Development Minus Height)
						Per Cent Overweight	Height Age	Developmental Age	
		Yr. Mo.			Yr. Mo.		Yr. Mo.	Yr. Mo.	Yr. Mo.
1	R. B.	1 6	33	34	1 9	80	(2 2)	7 2	5 6
2	S. B.	2 3	36	51	2 9	50	(3 1)	7 2	4 1
3	S. G.	2 11	39½	67	3 9	37	(3 9)	6 8	2 11
4	G. S.	3 6	42	50	4 3	32	(4 8)	7 3	2 7
5	C. C.	3 9	41⅜	53	3 3	43	(4 6)	7 7	3 1
6	C. L.	4 10	47½	74	5 9	42	7 9	10 10	5 1
7	F. D.	5 1	46	62	6 0	55	6 11	9 1	3 3
8	T. A.	5 4	45½	61	5 9	37	6 10	9 3	3 5
9	J. S.	5 10	48½	74	7 0	60	8 2	10 9	3 7
10	N. K.	6 5	46	80	6 9	69	7 10	12 6	5 8
11	R. L.	6 6	47½	76	8 0	49	7 7	11 6	4 7
12	L. B.	6 8	48½	74	6 9	37	8 3	10 9	3 6
13	C. R.	7 ..	47½	81	6 9	56	7 7	12 3	4 10
14	H. G.	7 7	48½	80	7 0	51	8 0	11 5	3 3
15	F. C.	8 3	53½	84	9 9	29	10 9	12 3	1 6
16	J. H.	8 3	51½	102	9 9	70	12 6	13 6	1 6
17	W. H.	8 6	57	118	8 9	40	12 4	14 4	2 0
18	F. B.	9 6	54½	86	10 9	33	11 6	13 2	2 2
19	S. F.	9 8	56½	108	9 9	26	12 3	13 9	1 6
20	D. B.	9 9	51	97	9 3	56	9 6	13 2	3 8
21	J. C.	10 1	56	120	10 9	48	12 0	14 8	2 8
22	W. D.	10 6	55	95	11 3	23	11 7	13 2	1 7
23	H. P.	11 6	57	140	12 3	74	12 6	16 6	4 0
24	A. H.	11 7	57½	101	12 3	17	12 8	13 6	0 10
25	J. P.	13 5	61⅜	154	14 3	45	14 0	17 6	3 6

TABLE 2.—*Obese Girls*

Number	Initials	Age	Height, Inches	Weight, Pounds	Skeletal Age	Calculations from Wetzel's Grid			Difference (Development Minus Height)
						Per Cent Overweight	Height Age	Developmental Age	
		Yr. Mo.			Yr. Mo.		Yr. Mo.	Yr. Mo.	Yr. Mo.
1	A. Y.	2 ..	37¼	42	2 3	61	(3 0)	7 6	4 6
2	F. K.	2 9	39½	49	3 3	49	(3 9)	7 8	3 5
3	S. B.	2 9	39½	49	3 3	44	(3 6)	7 0	3 3
4	T. S.	3 1	41½	49	4 6	87	5 ..	9 8	4 8
5	D. B.	3 5	39⅜	51	3 3	86	(3 10)	7 3	3 6
6	A. E.	4 6	43⅜	72	5 3	88	6 ..	10 9	4 9
7	F. S.	5 0	45¾	97	6 3	115	6 9	12 6	5 9
8	M. S.	5 2	44	58	6 6	37	6 2	8 2	2 0
9	Z. F.	5 5	45½	73	7 3	87	5 10	10 6	4 8
10	F. P.	6 1	49¼	81	7 6	45	8 9	11 7	2 10
11	H. W.	6 8	47	67	8 0	34	7 6	9 6	2 0
12	G. B.	6 10	48½	113	9 0	109	8 0	13 9	5 9
13	A. C.	7 1	51⅜	105	10 6	86	9 9	12 8	2 11
14	M. R.	7 2	54½	101	9 6	39	11 3	13 4	2 1
15	H. E.	7 9	53½	104	10 9	48	10 8	13 6	2 11
16	A. T.	8 2	50	97	9 9	67	8 10	12 9	3 11
17	A. S.	8 6	48½	72	8 9	33	8 0	10 0	2 0
18	M. B.	8 10	50	76	8 9	31	8 10	11 2	2 4
19	J. F.	9 7	52	105	12 3	67	9 6	13 6	4 0
20	B. F.	10 6	57	97	10 6	57	9 6	12 6	3 0

2. Todd, T. W.: Atlas of Skeletal Maturation, St. Louis, C. V. Mosby Company, 1937.

3. Burgess, M. A.: Construction of Two Height Charts, J. Am. Statist. A. **32**: 290, 1937.

4. Bruch, Hilde: Physical Growth and Development of Obese Children, J. Am. Dis. Child. **58**: 457 (Sept.) 1939.

entage of overweight. The dependence of the excessively high value for developmental age on the weight excess is illustrated in chart 2. On this chart the percentage overweight is plotted against the difference between developmental age and height age. The direct relationship between the excessively high value

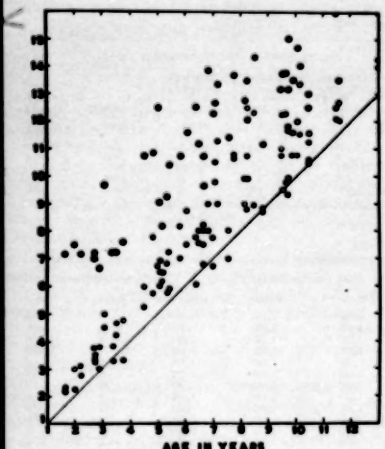

Chart 1.—Relation between chronologic age, skeletal maturation and "developmental age" (Wetzel) in obese children: The abscissa indicates chronologic age in years, the ordinate the achievement in different growth phases. The 45 degree line indicates equality (normal development) between chronologic and achievement age. Skeletal age is represented by solid dots, height age by open circles, and developmental age by circles with a center dot.

for developmental age and the excessive weight is obvious. The deviation from the height age, and not the skeletal age, was chosen for comparison because both the height and the developmental age, and also the weight excess, were calculated from Wetzel's grid. These three values are therefore directly comparable. The deviation from the skeletal age would show somewhat higher values; yet the relationship to the weight excess would be very similar.

Further observations were made in nonobese children with other distortions in height or weight development. They are presented in table 3. Cases 1 and 2 represent tall and thin children, both of whom have a normal skeletal age. The rating on the grid gave them too low developmental age. In the third case (table 2) the weight development is so excessive that it compensates for the low weight and leads to too high a value for developmental age. This child also has a normal skeletal age.

Two abnormally short patients are presented as cases 4 and 5. In these patients the height-weight relationship is normal; therefore the height age and developmental age from the grid show good agreement. Yet the skeletal age was in 1 case below and in the other above the value assessed from the grid.

Finally, figures are given for 2 girls with hypothyroidism who had been inadequately treated. Both were short but of stocky body build. In both cases the rating from the grid gave a developmental age in excess of the actually observed skeletal age.

The examples of tables 1, 2 and 3 were taken at random from a large group of children with some abnormal bodily dimension, who had been extensively studied. In no case did the "developmental age" according to the grid agree with the assessment of the skeletal age, according to the roentgenologic determination. The "developmental age," distorted by the inclusion of the abnormal dimension, gives too high or too low a value. Wetzel's claim that the "developmental age" may serve the same purpose as the skeletal age could not be verified in these 52 children. Yet it is in children of this type that the correct assessment of the developmental achievement is of diagnostic and prognostic importance.

Many of the children in tables 1, 2 and 3 have been followed for several years. Their subsequent puberal development has confirmed the value of the skeletal age for arriving at a fairly accurate prediction of further development. In none of these cases would the assessment of the "developmental age" have given a reliable prediction about the time of maturity.

BASAL METABOLISM

The heat production scale of the grid is given in conjunction with the developmental levels. Since the developmental levels were found to be directly influenced by the abnormal bodily dimension, it is obvious that the same must be expected for the prediction of basal metabolism, in contrast to the claim that "the present method offers the encouragement that clinical distinction between normal and abnormal states of metabolism can be made with greater accuracy and less uncertainty than before" and "without correcting for body size, physique or age." This statement may hold true for normal children; it could not be validated for children with abnormal bodily dimensions. The same problems which apply to the use of other standards arise also with the diagnostic application of the new standards.

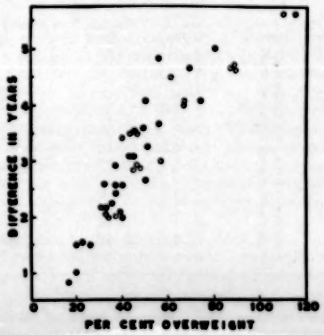

Chart 2.—The relationship between degree of obesity and the excessive value for developmental age: The abscissa indicates the weight excess in percentage, the ordinate the difference between developmental age and height age. All these values were calculated from the grid. Values for boys are represented by solid dots, for girls by open circles.

In tables 4 and 5 are presented observations on 20 obese boys and 20 obese girls who were chosen at random (with the exception that a number of patients fell outside the given scale). The observed caloric

output is given in comparison to the predictions from Wetzel's new standards and Talbot's weight standards.[5] The correlation coefficient between the two predictions is very high, namely 0.95. Both standards give too high predictions for very young children. There is no reason to suppose that the deviation in these young children is an expression of abnormal metabolism any more than to conclude that the agreement in the older children between the observed calories and both Wetzel's and Talbot's weight standards is necessarily an expression of normal metabolism. Wetzel's standards gave a slightly better result in an unusually tall boy (case 10, table 4) and in a rather short but very heavy boy (case 16, table 4). No other conspicuous differences between the predictions from these two standards were observed. The correlation coefficient between the two standards was higher than that between each standard and the observed calories (0.81 and 0.77 respectively). One may conclude that in obese children the abnormal dimension (the excessive weight) enters into the calculation of the basal metabolism and cannot be disregarded.

TABLE 3.—*Nonobese Children*

Number	Initials	Sex	Age Yr.	Age Mo.	Height, Inches	Weight, Pounds	Skeletal Age Yr.	Skeletal Age Mo.	Calculations from Wetzel's Grid: Per Cent Difference in Weight	Height Age Yr.	Height Age Mo.	Developmental Age Yr.	Developmental Age Mo.	Calories	Observed Calories
1	R. v. A.	♂	12	10	60	70	12	..	—27	13	4	10	9	1,220	1,284
2	H. W.	♂	12	3	60	76	12	..	—25	13	6	11	3	1,170	1,284
3	T. B.	♀	10	3	65½	85	10	..	—26	15	6	11	8	1,220	1,400
4	J. C.	♂	7	2	49½	56	3	6	0	5	..	5	..	820	912
5	M. G.	♂	13	10	54½	80	13	..	+ 8	11	2	12	..		
6	S. C.	♀	8	2	58	60	4	5	+20	8	2	5	6	840	578
7	R. P.	♀	10	5	42	48	4	6	+30	5	3	6	9	935	734

TABLE 4.—*Obese Boys*

Number	Initials	Age Yr.	Age Mo.	Height, Cm.	Weight, Kg.	Per Cent Overweight	Calories Predicted: Wetzel	Calories Predicted: Talbot	Calories Observed	Percentage Deviation from: Wetzel	Percentage Deviation from: Talbot
1	R. P.	5	5	125	29.1	14	1,160	1,130	1,090	— 6	— 4
2	P. R.	5	7	118	34.1	59	1,230	1,250	984	—21	—21
3	O'C.	6	7	128	40.7	52	1,340	1,350	1,242	— 7	— 8
4	M. N.	6	9	126	33.5	30	1,220	1,200	1,135	— 7	— 5
5	L. R.	6	11	126	30.8	19	1,185	1,155	1,238	+ 5	+ 6
6	O'G.	7	5	129	41.2	54	1,345	1,300	1,222	— 9	—10
7	H. M.	7	10	135	41.0	30	1,340	1,335	1,182	—12	—11
8	S. S.	8	11	132	38.5	30	1,310	1,310	1,310	0	0
9	D. B.	9	9	131	43.5	50	1,380	1,360	1,235	—11	—11
10	J. N.	9	11	144	41.9	15	1,350	1,270	1,560	+ 3	+16
11	A. L.	10	2	138	44.9	35	1,400	1,410	1,392	— 1	— 1
12	H. P.	10	6	142	37.5	62	1,240	1,300	1,432	— 6	— 9
13	H. L.	10	9	143	54.4	50	1,510	1,560	1,755	+16	+13
14	M. M.	11	4	155	53.6	17	1,520	1,550	1,668	+ 6	+ 8
15	S. T.	11	9	166	62.7	12	1,610	1,700	1,560	— 1	— 6
16	G. T.	11	9	148	66.4	62	1,630	1,700	1,470	—10	—17
17	J. P.	12	1	151	58.0	37	1,550	1,600	1,555	0	— 3
18	S. S.	12	6	150	52.5	25	1,500	1,530	1,370	— 9	—10
19	S. R.	12	7	150	55.0	31	1,530	1,565	1,538	+ 1	— 2
20	F. P.	13	2	147	67.2	70	1,630	1,700	1,522	0	— 7

TABLE 5.—*Obese Girls*

Number	Initials	Age Yr.	Age Mo.	Height, Cm.	Weight, Kg.	Per Cent Overweight	Calories Predicted: Wetzel	Calories Predicted: Talbot	Calories Observed	Percentage Deviation from: Wetzel	Percentage Deviation from: Talbot
1	S. B.	4	5	114	28.1	44	1,055	1,030	848	—20	—18
2	M. E.	5	1	113	24.1	28	960	945	869	—11	— 9
3	G. B.	6	10	128	36.4	94	1,320	1,400	1,478	+12	+ 6
4	A. C.	7	1	132	41.3	60	1,230	1,265	1,400	+14	+11
5	G. P.	7	5	125	37.4	50	1,190	1,295	1,104	— 7	—14
6	M. B.	8	6	127	34.0	27	1,140	1,140	1,188	+ 4	+ 4
7	G. G.	8	7	131	37.7	30	1,200	1,200	1,110	— 8	— 8
8	G. B.	8	9	131	37.7	30	1,200	1,200	1,110	— 8	— 8
9	B. G.	9	2	133	37.4	27	1,210	1,205	1,295	+ 6	+ 7
10	E. B.	8	3	147	49.0	24	1,320	1,370	1,275	— 3	— 7
11	A. B.	9	6	140	44.1	29	1,270	1,310	1,410	+11	+ 8
12	E. C.	9	4	136	40.2	55	1,410	1,535	1,378	— 9	—11
13	A. C.	9	6	142	52.4	46	1,345	1,435	1,345	0	— 7
14	S. G.	9	6	144	41.0	12	1,250	1,260	1,258	+ 1	0
15	J. F.	9	7	134	46.6	33	1,290	1,340	1,452	+13	+ 8
16	R. F.	10	5	134	61.2	67	1,360	1,360	1,355	+ 8	+ 4
17	R. B.	10	8	135	54.5	34	1,375	1,465	1,450	+ 5	— 1
18	R. K.	11	4	144	49.3	35	1,320	1,360	1,350	+ 2	— 3
19	M. H.	11	7	150	48.2	14	1,320	1,375	1,284	— 3	— 7
20	J. F.	11	9	148	59.0	48	1,410	1,530	1,398	— 2	— 9

In the very thin (cases 1, 2 and 3, table 3) and very short (case 4, table 3) children the prediction from Wetzel's standards gave lower values than were actually observed (last two columns in table 3). Here again the abnormal bodily dimension enters into the assessment and no diagnostic interpretation can be given to this difference.

In the 2 hypothyroid patients (cases 6 and 7, table 3) the prediction from the grid was higher than the observed calories. In these 2 patients the interpretation

5. Talbot, F. B.: Basal Metabolism Standards for Children, Am. J. Dis. Child. 55: 455 (March) 1938.

of the observed metabolism as "low" may be justified but only because the retarded skeletal age (supported by the clinical history and other findings) points to hypothyroidism as the underlying disturbance. The assessment of the "developmental level" from the grid, which was found to be higher than the height age, would not have permitted this diagnostic conclusion. The other customary standards give also a low rating in these children with true hypothyroidism.

SUMMARY AND CONCLUSION

1. The grid for evaluating physical fitness (Wetzel) was applied to 52 children with abnormal bodily dimensions. The usefulness of the new method for the graphic recording and early recognition of abnormal changes in the height-weight relationship could be confirmed. The grid appears to be of value for the appraisal of therapeutic results.

2. The relative advancement or retardation of statural growth ("height age") can be readily assessed with the aid of the auxodromes.

3. The assessment of the "developmental age" from the combined height and weight value was found to show no agreement, in any instance, with the roentgenographically determined skeletal age. Clinical observation has proved the skeletal age to be fairly reliable for the prediction of the future development and maturation.

4. The deviation of the "developmental age" could be directly related to the abnormal physical dimension. The assessment of the "developmental age" from the grid leads to an unreliable prediction of maturation.

5. Since the standards for basal metabolism predictable from grid readings are alined to the developmental levels the same limitations apply to them. They also are influenced by the abnormal bodily dimension and should not be used for the assessment of abnormal metabolic states without correction for and consideration of the abnormal dimension.

6. It was considered necessary to point out the limitations of the new method in order to bring into clearer relief the true usefulness of the method. It is to be expected that the application of the grid in public health work, school examinations and so on will render valuable service in screening out children with abnormal body proportions and disturbances in developmental progress. For the diagnosis, however, of the underlying disturbance in such children, and for the prediction of future development and maturity, the assessment of "developmental age" and also of basal metabolism from the grid offers only unreliable information.

Johns Hopkins Hospital.

Insurance Against Misuse of Science.—It is a stimulating challenge to have others say that there is too much science in the world. It is my opinion that we have too little of the scientific spirit in those who use the discoveries of science! We create machines and they are allowed to exploit people. Every tool and machine should have a tag attached as when a mechanic finishes greasing your car at the garage. The tag should say that you last looked at the social effects of the tool three months or three years ago and that it is time to have another look. Society should require insurance against misuse—for everything that science is and means is wrapped up in its effect on men. Human beings are at the center of it all. Not the thousand and one laboratories and "things" that science produces but rather their social effects are what concern us.—Bowman, Isaiah: Enduring Purpose, *Assn. Am. Coll. Bull.* **26**:195 (May) 1940.

FATAL PULMONARY EMBOLISM FOLLOWING VARICOSE VEIN INJECTION

REPORT OF A CASE AND REVIEW OF THE LITERATURE

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AND
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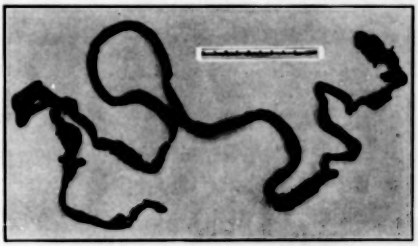
Within the past two decades the obliteration of varicose veins by the injection of sclerosing solutions has become an accepted form of treatment. This may be associated, however, with a certain amount of danger, regardless of the fact that it is being and has been employed daily in the treatment of thousands of patients with no resulting serious complications. Serious reactions to the injection of sodium morrhuate have been encountered by Lewis,[1] Dale [2] and McCastor,[3] as noted in a previous publication by one of us.[4]



Pulmonary embolus from the left common iliac vein.

In the case reported, death was proved to be due to pulmonary embolism. While this is undoubtedly the most serious complication to be feared, it is possible that allergy to sodium morrhuate plays a role in some of the reactions observed. This could conceivably be related to an acquired sensitivity from the previous administration of cod liver oil. For this reason it is important to question the patient concerning asthma, hay fever or other manifestations of allergic predispositions, as well as concerning previous sodium morrhuate injections. In addition to this a sensitivity test with sodium morrhuate should be made or a small initial injection given.

Our aim in this paper is to show that a fatal complication may occur unless certain precautions are taken. The case report and a review of the fatal cases reported by other clinicians may help to prevent this tragic sequel to a popular method of treatment. It is probable that more fatal cases have occurred but have not been reported.

From the Department of Surgery, Mercy Hospital and Loyola University School of Medicine.

1. Lewis, Kenneth M.: Anaphylaxis Due to Sodium Morrhuate, J. A. M. A. **107**:1298 (Oct. 17) 1936.
2. Dale, Maurice L.: Reaction Due to Injection of Sodium Morrhuate, J. A. M. A. **108**:718 (Feb. 27) 1937.
3. McCastor, J. T. N., and McCastor, Mary C.: Reaction to Sodium Morrhuate Injections for Varicose Veins and Hydrocele, J. A. M. A. **108**:1799 (Nov. 27) 1937.
4. Vaughn, Arkell M.: Varicose Veins, Illinois M. J. **78**:137, 1940.

REPORT OF CASE

Miss J. T., aged 65, was admitted to the outpatient department of the Mercy Hospital Free Dispensary on March 24, 1936 with a history of varicose ulcers on the left leg and swelling of the left ankle for the past five weeks. The present illness dates back to 1926, at which time she was hospitalized for five weeks because of ulcers of the left leg which evidently rate 88, the respiratory rate 18 and the blood pressure 140 systolic and 95 diastolic. General physical examination was negative except for a soft, moderately low pitched, apical systolic murmur. The essential pathologic condition was a shallow, tender ulceration the size of a 25 cent piece (24 mm.) over the anterior part of the tibia at the junction of the middle and lower thirds of the left leg, which oozed serum and pus and

TABLE 1.—*Reported Cases of Fatal Pulmonary Embolism Following the Injection Treatment of Varicose Veins*

No.	Author	Year	Solution Used	Amount	Ambulatory; Bedridden	Result	Time After Injection
1	Hohlbaum [1]	1922	Pregl's isotonic iodine solution	80 cc.		Died	14 days
2	Linser: München. med. Wchnschr. 71: 418, 1924	1924	Sodium chloride		Ambulatory	Died	14 days
3	Hirsch and Nobl: Wien. klin. Wchnschr. 39: 1310, 1926	1926	Dextrose 60%		Bedridden following hemorrhoidectomy	Died	42 days
4	Lomholt: Ugesk. f. læger 89: 7, 1927	1927	Sodium chloride 20%	25 cc.		Died	28 days
5	Olson [6]	1927	Sodium chloride 25% Dextrose 50%	50 cc. 40 cc.	Ambulatory	Died	10 days
6	Kühnau: Zentralbl. f. Chir. 54: 2580, 1927	1927	Calorose		Ambulatory	Died	5 days
7	Leval: Monatschr. f. ungar. Med. 1: 201, 1927	1927				Died	
8	Schoenhoff, cited by Lomholt: Ugesk. f. læger 89: 718, 1927	1927	Sodium chloride 15%		Bedridden following hemorrhoidectomy	Died	28 days
9	von Eiselberg, cited by Moszkowicz: Wien. med. Wchnschr. 77: 46, 1927	1927	Sugar solution		Bedridden from excision and ligation of varicose veins	Died	10 days
10	Faure, cited by Vigyazo: Zentralbl. f. Chir. 55: 70, 1928	1928				Died	
11	McPheeters and Rice [7]	1928	Sodium chloride 20%	90 cc.	Bedridden following excision and ligation of vein	Died	20 days
12	Kilbourne [10]	1929	Sodium salicylate		Ambulatory; massage of thrombosed vein	Died	42 days
13	Anschutz-Lohr: Zentralbl. f. Chir. 56: 3211, 1929	1929	Sodium chloride 20%	15 cc.		Died	
14	Anschutz-Lohr: Zentralbl. f. Chir. 56: 3211, 1929	1929	Sodium chloride 25%	25 cc.	Bedridden	Died	10 days
15	Oehlecker: Zentralbl. f. Chir. 57: 1122, 1930	1930	Sodium chloride 20%		Bedridden following vein ligation	Died	Few days
16	Silverman [8]	1931	Sodium chloride 25%	25 cc.	Bedridden with thrombophlebitis	Died	10 days
17	Horn and Foged: Mitt. a. d. Grenzgeb. d. Med. u. Chir. 43: 17, 1931	1931	Inversal, varicosmon	Total 57 cc.; 7 injec. in 5 wks.		Died	15 minutes after last injection
18	Federhen: Ztschr. f. med. Beamte 44: 289, 1931	1931	Calorose 60%			Died	
19	Behring: Svenska läk.-tid. 29: 457, 1932	1932	Quinine, urethane			Died	
20	Matas: Ann. Surg. 96: 691, 1932	1932	Quinine, urethane			Died	
21	Spilsbury: J. A. M. A. 98: 1754, 1932	1932	Sodium salicylate			Died	
22	Spilsbury: J. A. M. A. 98: 1754, 1932	1932	Sodium salicylate			Died	
23	Spilsbury: J. A. M. A. 98: 1754, 1932	1932	Sodium morrhuate			Died	
24	Spilsbury: J. A. M. A. 98: 1754, 1932	1932			Bedridden	Died	7 days; tubular clot in heart
25	Krauss: Zentralbl. f. Chir. 60: 2126, 1933	1933	Varicosmon (concentrated sugar sol.)		Bedridden	Died	21 days after injection, 9 days after patient put to bed
26	Stoner: Am. J. Surg. 25: 148, 1934	1934	Invertose			Died	14 days
27	Westerborn [11]	1937	Quinine, urethane			Died	12 days
28	Westerborn [11]	1937	Varicon			Died	21 days
29	Westerborn [11]	1937	Varicon	2 cc.		Died	30 days
30	Westerborn [11]	1937	Quinine, urethane (varicon)			Died	2 days
31	Westerborn [11]	1937	Quinine, urethane			Died	49 days
32	Westerborn [11]	1937	Quinine, urethane	2.5 cc.		Died	7 days
33	Westerborn [11]	1937	Quinine, urethane	4 cc.		Died	10 days
34	Westerborn [11]	1937	Quinine, urethane	2 cc.		Died	35 days
35	Westerborn [11]	1937	Quinine, urethane	10 cc.		Died	24 days
36	Westerborn [11]	1937	Quinine, urethane			Died	18 days
37	Westerborn [11]	1937	Quinine, urethane			Died	30 days
38	Homans [12]	1937			Bedridden	Died after ligation	
39	Homans [12]	1937			Bedridden	Died after ligation	
40	Homans [12]	1937			Bedridden	Died after ligation	
41	Dean and Dulin [13]	1940				Died	
42	Dean and Dulin [13]	1940				Died	
43	Nunn and Harrison: J. A. M. A. 117: 347, 1941	1941	Sodium morrhuate	Total 4 cc. in 4 days	Ambulatory	Died	6 weeks
44	Vaughn and Lees	1941	Sodium morrhuate	Total 7.5 cc.; 5 injec. in 22 days	Bedridden	Died	31 days after 1st, 8 days after last injection

completely healed, and she remained symptom free until five weeks prior to the present hospital admission. Aside from this condition the patient had always been in good health and had been able to carry out her duties as a room cleaner, which involved considerable walking and standing. Her father died of a heart attack, her mother of pulmonary tuberculosis and one brother from a "stroke."

Physical examination revealed that the patient was fairly well developed but poorly nourished, intelligent, alert and apparently not in any distress. Her temperature was 99.2 F., the pulse was surrounded by a reddish blue indurated area of skin. Over the popliteal and patellar regions there was a similar area of reddish blue unbroken skin the size of an elm leaf. The veins in the left leg were enlarged and tortuous. Neurologic examination was negative.

Urinalysis and blood counts were within normal limits, and Wassermann and Kahn tests were negative.

The patient was referred to the Department of Dermatology, where a diagnosis of varicose ulcer and veins was made, and she was then referred to the Department of Surgery for treat-

ment. On March 28, 2 cc. of 5 per cent sodium morrhuate was injected into a varicosed vein just proximal to the ulcer and the ulcer dressed with Peruvian balsam. Evidently the ulcer did not improve and on April 14 she was admitted to Mercy Hospital for further treatment and study.

At this time the patient was kept in bed; hot fomentations and a heat cradle were applied. Four injections of 1.5 cc. of 5 per cent sodium morrhuate were given on the 16th, 17th, 18th and 20th of April, all being given in the varicosed vein just above the ulcer. After the last injection the ulcer was noted to be healing rapidly. At 6 a. m. on April 28, after sleeping six hours, the patient suddenly became dyspneic and lost consciousness; her pulse was of poor quality and the respiratory rate became slow. A considerable degree of cyanosis developed, and the skin became moist and cold. One ampule of caffeine with sodium benzoate was given without effect, and respirations ceased fifteen minutes after the onset of the attack.

A total of 7.5 cc. of a 5 per cent solution of sodium morrhuate had been given, and death occurred thirty-one days after the first and eight days after the last injection.

Autopsy by Dr. Eustace L. Benjamin revealed essentially a 4 by 4.5 cm. granulating wound on the mesial aspect of the left shin about the middle third. The surrounding skin was indurated and brown red to gray red. The posterior aspect of the thigh and knee was dark reddish brown. Both pleural cavities were completely obliterated by firm fibrous adhesions. There were old adhesions between the pericardial sac and the pleural surfaces and diaphragm, and bilateral chronic adhesive and obliterative pleuritis.

The size of the heart was about normal and the valves were essentially normal. The coronary arteries showed a rather severe sclerosis with 40 to 50 per cent reduction in the patency of the lumens. There was a moderate degree of atherosclerosis at the beginning of the aorta, which increased in degree as the abdominal aorta was reached. The endocardium was fairly smooth throughout. The aortic valve leaflets were slightly sclerotic, with cohesion of their free margins at their point of attachment. The corpora aurantis were hard and slightly enlarged. There was a subepicardial sclerosis (soldiers' spots) on the ventral surface of the right ventricle.

Both main pulmonary arteries and their first division were occluded by coiled emboli. The lungs were dark red to gray and hyperemic. There was moderate coal pigmentation. Pleural surfaces were shaggy as the result of fibrous adhesions. The left common iliac vein was distended with blood; its tributaries deeper in the leg were occluded by antemortem clots. Other organs showed no noteworthy changes.

The pathologic diagnosis was bilateral pulmonary embolism; thrombosis of the veins of the left leg and common iliac vein; bilateral pulmonary hyperemia; generalized arteriosclerosis, especially of the abdominal aorta and of the coronary arteries; fibrous obliteration of the pleural cavities; chronic healing ulcer (varicose) of the left leg.

COMMENT

The first case of fatal pulmonary embolism following the injection of sclerosing solutions for the treatment of varicose vein was reported in 1922 by Hohlbaum.[5] The first American author to report a fatal case was Olson[6] in 1927. A comprehensive review of the literature on this subject was first attempted by McPheeters and Rice[7] in 1928. These authors, after a careful search of the European and American literature, found 4 diagnosed cases of fatal pulmonary embolism in a total of 53,000 cases of varicose veins treated by injection. In 1931 Kettel[8] reviewed 60,000 cases and reported ten deaths in addition to those reported by McPheeters and Rice. After careful analysis of these deaths, however, only one can be attributed to the present day recognized technic of injection treatment. Silverman[9] reviewed the literature carefully up to 1931 and found a total of seventeen deaths and added one of his own, making a total of eighteen deaths. His search also revealed 3 nonfatal cases of pulmonary embolism following injection treatment. The literature was brought up to date in 1934 by Kilbourne,[10] who added 9 cases to those already collected by Silverman. Westerborn[11] in 1937 reviewed the cases in Sweden and reported eleven deaths in 30,000 cases. In the same year Homans,[12] reviewing one hundred and sixty-two vein ligations for thrombophlebitis at the Massachusetts General Hospital, reported three deaths from pulmonary embolism. In 1940 Dean and Dulin,[13] reviewing about 600 cases of varicose veins treated by injection at the University Hospitals, State University of Iowa College of Medicine, reported two deaths from pulmonary embolism; they state that in their opinion the danger of embolism is greater than heretofore acknowledged and recommend routine high saphenous vein ligation preceding the injection treatment. Tables 1 and 2 list the reported cases of fatal and nonfatal pulmonary emboli following the injection treatment of varicose veins.

TABLE 2.—*Reported Cases of Nonfatal Pulmonary Embolism Following Injection Treatment of Varicose Veins*

No.	Author	Year	Solution Used	Amount	Ambulatory; Bedridden	Result
1	Bedner, cited by Nobl: Wien. med. Wchnschr. **76**:1286, 1926	1926	.....	.....	.....	Recovered
2	Keller: Zentralbl. f. Chir. **56**:3213, 1929..	1929	Sodium chloride 30%	.....	Bedridden	Recovered
3	Burton: U. S. Vet. Bur. Med. Bull. **6**:854, 1930	1930	Quinine preparation	.....	Ambulatory	Recovered
4	Binzel, cited by Liebholz: Med. Welt. **4**:507, 1930	1930	.....	.....	Bedridden from phlebitis	Recovered
5	de Takats, Geza: J. A. M. A. **96**:1111, 1931	1931	.....	.....	Bedridden following appendectomy	Recovered
6	Probstein: J. Missouri M. A. **33**:349, 1936	1936	Sodium salicylate 30%	5 cc.	Ambulatory	Recovered
7	Probstein: J. Missouri M. A. **33**:349, 1936	1936	Sodium morrhuate	0.5 cc.	Ambulatory	Recovered
8	Probstein: J. Missouri M. A. **33**:349, 1936	1936	Sodium salicylate 40%	10 cc.	Ambulatory	Recovered
9	Taylor: Am. J. Surg. **45**:145, 1939.....	1939	Sodium morrhuate 5%	10 cc. in middle ⅓ of thigh	Ambulatory	Recovered after ligation of saphenous, femoral, external iliac veins successively
10	Smith: Mil. Surgeon **85**:514, 1939.....	1939	Sodium morrhuate 5%	2-4 cc. daily	.....	Recovered
11	Smith: Mil. Surgeon **85**:514, 1939.....	1939	Sodium morrhuate 5%	2-4 cc. daily	.....	Recovered
12	Smith: Mil. Surgeon **85**:514, 1939.....	1939	Sodium morrhuate 5%	2-4 cc. daily	.....	Recovered
13	Smith: Mil. Surgeon **85**:514, 1939.....	1939	Sodium morrhuate 5%	2-4 cc. daily	.....	Recovered
14	Smith: Mil. Surgeon **85**:514, 1939.....	1939	Sodium morrhuate 5%	2-4 cc. daily	.....	Recovered
15	Smith: Mil. Surgeon **85**:514, 1939.....	1939	Sodium morrhuate 5%	2-4 cc. daily	.....	Recovered
16	Smith: Mil. Surgeon **85**:514, 1939.....	1939	Sodium morrhuate 5%	2-4 cc. daily	.....	Recovered
17	Smith: Mil. Surgeon **85**:514, 1939.....	1939	Sodium morrhuate 5%	2-4 cc. daily	.....	Recovered

5. Hohlbaum: Zentralbl. f. Chir. **49**:218 (Feb.) 1922.
6. Olson, O. A.: Fatality Following Varicose Vein Injection, J. A. M. A. **89**:692 (Aug. 22) 1927.
7. McPheeters, H. O., and Rice, C. O.: Varicose Veins, J. A. M. A. **91**:1090 (Oct. 13) 1928.
8. Kettel, K.: Zentralbl. f. Chir. **58**:1498, 1931.
9. Silverman, Isidore: Incidence of Embolism in Treatment of Varicose Veins, J. A. M. A. **97**:177 (July 18) 1931.
10. Kilbourne, N. J.: Treatment of Varicose Veins of the Legs, J. A. M. A. **93**:1320 (April 20) 1929.
11. Westerborn, A.: Acta chir. Scandinav. **79**:321, 1937.
12. Homans, J., in Nelson's Loose-Leaf Surgery **2**:748, 1937.
13. Dean, G. O., and Dulin, J. W.: Pulmonary Embolism Following the Injection Treatment of Varicose Veins, J. A. M. A. **114**:1344 (April 6) 1940.

CONCLUSIONS

The injection treatment of varicose veins is not free from complications, which may even be fatal.

Injection of too large amounts of sclerosing solution, as was the vogue in the earlier days of treatment of varicose veins, is dangerous. It is noted from the accompanying tables that 40 to 90 cc. of solution was used in some of the fatal cases. In our opinion, no more than 10 cc. of solution should be injected at any one visit.

Injection in the presence of thrombophlebitis is a potential source of an embolus.

"In the injection treatment of varicose veins, proper selection of cases, skilled technic and the complete cooperation of the patient after the injection in continuing routine daily activities will lessen the frequency of pulmonary embolism." [14]

SUMMARY

1. An additional case of fatal pulmonary embolism following varicose vein injection was observed.

2. Bedridden patients should not be injected.

3. It is important to keep patients ambulatory following the injection treatment of varicose veins.

1180 East Sixty-Third Street.

Clinical Notes, Suggestions and New Instruments

SALMONELLA SCHOTTMÜLLERI ISOLATED FROM SACROLUMBAR LESION OF TWENTY-FOUR YEARS' DURATION

E. E. Ecker, Ph.D., A. O. Kuehn and E. W. Rechoft, M.D., Cleveland

Since Achard and Bensaude [1] established the etiology of paratyphoid fever in 1896, the causative organism and its related species and types have been isolated in numerous instances from abscesses of widely different tissues. The literature, however, offers only 3 doubtful cases in which an organism of the Salmonella schottmülleri type has been obtained from infections involving the bones.

Achard and Bensaude were the first also to describe a case of purulent arthritis from which this organism was recovered. In 1900 Cushing [2] reported the discovery of a paratyphoid bacillus from a costochondral abscess, and in 1916 Gildemeister [3] isolated a similar organism from a periosteal lesion of the forearm. There is little assurance that the organisms found in these early cases are of the true Schottmüller type. The complex antigenic constitution of this group of organisms was not known and serologic methods of differentiation therefore still were undeveloped.

REPORT OF CASE

History.—A white man aged 36 had been admitted to a hospital for one month with high fever of unknown origin when he was 13. At the end of this time severe pains in the right sacrolumbar region prompted an exploratory operation on that side. Negative results and continued pain suggested that the pain originated from the spine, and a body cast was put on. However, after removal of the cast the pain recurred. He was again placed in a cast, and this cast was reduced gradually over a period of six months. With final removal of the cast the pain had completely disappeared.

From that time on, and up until two years before the present admission, the patient remained well but suffered occasional relapses following any straining of the back. Two years before the present admission the patient was hospitalized for a severe relapse (fever and pain in the back), and again a cast was put on. After removal of this cast, which was worn for eight weeks, a sacrolumbar abscess was uncovered and a culture was taken from the pus, with negative results. The abscess has since opened spontaneously on two occasions and has been aspirated once. Previous to this report, all bacteriologic examinations had given negative results. At the beginning of this year the patient again suffered a relapse and pus was aspirated from the sacrolumbar abscess. The organism recovered will be characterized.

Roentgenologic Examination.—The lesion was found between the fifth lumbar and the first sacral vertebra, involving the end-plates and destroying the intervertebral disks. A large spur was observed on the upper anterior surface of the fifth lumbar vertebral body. The lesion appeared to represent an old infectious spondylitis. An extensive sinus tract was also noted in the left midquadrant, situated retroperitoneally and extending to the subcutaneous tissues of the back but not communicating with either the left kidney or any part of the colon. A possible relationship was believed to exist between the sinus tract and the vertebral lesion, but roentgenologically a communication was not observed between the two processes.

Bacteriologic Examination.—Aspirated pus was inoculated on Endo agar, Wilson-Blair agar, desoxycholate agar, blood agar, Sabouraud's maltose and dextrose agar and Löwenstein's and Petragnani's mediums. At this time pus was injected into the inguinal region of 2 guinea pigs.

From the differential mediums (Endo, Wilson-Blair and desoxycholate agars) a short, thin, motile and gram-negative rod was isolated.

The Sabouraud, Löwenstein and Petragnani mediums showed no growth and at the designated time the guinea pigs failed to show evidence of tuberculosis.

Cultural Characteristics.—On nutrient agar the colonies of the isolated organism compared favorably with colonies of the paratyphoid group. The new strain (Z) failed to produce a slime wall; Schottmüller strains generally produce a slime wall. The Z strain also failed to show raffinose budding.

The Z strain did not produce gas in any of the carbohydrates and alcohols in the early cultures. Only after three months did the transplants show a slight amount of gas.

In general, it can be said that the fermentation reactions of the Z strain, with the exception of its failure to attack glycerin and to produce gas, paralleled the accepted reactions of a true Schottmüller type.

The Z strain decomposed salts of organic acids, namely sodium citrate and levosodium tartrate but not dextrosodium tartrate. It was capable of reducing nitrates. On Bitter's rhamnose milk the organism changed the methyl red indicator to yellow. On Rothberger's neutral red agar it brought about at first a fluorescence and later a decoloration of the medium. The Z strain produced hydrogen sulfide.

On the basis of its cultural characteristics, then, the Z strain deviated from that of S. schottmülleri only in the following respects: (1) It did not exhibit a slime wall, (2) it did not produce budding on raffinose agar and (3) it did not attack glycerin.

Serologic Examination.—All agglutination reactions were carried out according to the macroscopic technic of Coleman. It was shown that the X organism agglutinated in an Eberthella typhi immune serum in dilutions up to 1:40, in a Salmonella paratyphi A immune serum in dilutions up to 1:80 and by an S. schottmülleri immune serum in dilutions up to 1:2,560.

Conversely, agglutination tests were set up with the patient's serum and known organisms. The patient's serum agglutinated the E. typhi O, E. typhi B, S. paratyphi A and S. schottmülleri antigens only to a very slight degree (1:20 to 1:40). However, the patient's serum, in dilution up to 1:1,280, agglutinated its homologous antigen (Z). The failure of this serum to agglutinate a known S. schottmülleri does not lessen the value of the presumptive test, because in many cases in which S.

14. Theis, F. V.: Surg., Gynec. & Obst. **60**: 996, 1935.

Drs. P. R. Edwards and M. B. Coleman made corroborative examinations of this strain.

From the Institute of Pathology and the University Hospitals, Western Reserve University.

1. Achard, Charles, and Bensaude, Raoul: Bull. et mém. Soc. méd. d. hôp. de Paris **13**: 820, 1896.
2. Cushing, Harvey: Bull. Johns Hopkins Hosp. **11**: 156, 1900.
3. Gildemeister, E.: Centralbl. f. Bakt. (Abt. I) **78**: 129, 1916.

schottmülleri organisms have been involved results identical with those observed here have been reported.

Absorption.—Absorption tests were carried out with a diluted immune serum (one-sixty-fourth end titer) in order to eliminate a prozone effect. In every instance the absorption was complete. These tests included the following: (1) The patient's serum was absorbed with S. schottmülleri organisms and the absorbed serum tested with S. schottmülleri as well as with the Z organisms. 2. The patient's serum was absorbed with the Z strain and the absorbed serum tested with the Z organisms. 3. S. schottmülleri immune serum was absorbed with the S. schottmülleri and also with the Z strain, and the absorbed serums were tested with both strains.

The Z organisms absorbed all the agglutinins from the patient's serum as well as from the specific immune serum.

Immune Serums Made from the Z Strain.—Rabbits were immunized with H and O antigens of the strain. The Z-H antiserum agglutinated its homologous antigen up to a dilution of 1:10,240, while only weak agglutinations were noted when the Z-O antigen was employed. This serum further agglutinated the S. schottmülleri and aertrycke antigens in dilutions up to 1:1,280 and 1:320 respectively. The nonspecific agglutination of the Salmonella aertrycke by the Z-H immune serum is explained by the fact that it shares common antigenic factors with the S. schottmülleri strain.

The immune serums prepared against the Z-O antigens were not as specific as the immune serums prepared against the Z-H antigens, and agglutinations similar to those described for the Z-H immune serums were employed to determine specificity.

The Z-O immune serum, in dilutions up to 1:320, strongly agglutinated its homologous antigen, while at the same dilution it only weakly agglutinated the Z-H antigen.

When Salmonella enteritidis and Salmonella suipestifer organisms are employed with the Z-O immune serums, only questionable agglutinations were observed. However, the Z-O antiserum, in dilutions up to 1:160, agglutinated the S. aertrycke, which shows the close relationship between it and the S. schottmülleri.

Antigenic Analysis.—During the past two decades the serologic differentiation of the Salmonella group advanced rapidly and culminated in the splendid works of White[4] and of Kauffmann.[5] From these studies it is known that in many members of the Salmonella group, including the S. schottmülleri, the flagellar (H) antigens are diphasic. In these instances the flagella of the so-called diphasic organisms may assume two alternative forms, namely a specific phase and a group phase. The antigenic components of the specific phase are specific for the particular species or type concerned, or they may be shared by only a few other species or types. The antigenic components of the group phase are, however, shared by many other species or types. A diphasic organism may possess one or both phases. An organism in one phase, although always capable of giving rise to descendants in the alternative phase, usually produces daughter cells having their own particular phase. In any given species or types there may be more than one H antigen (flagellar) in the specific phase. The number of H antigens in the specific phase varies usually from one to four. Generally, several different antigens occur in the group phase, numbering usually from two to four.

In regard to the O antigens (somatic), the majority of species have two components. Some show more than two.

The terminology of Kauffmann was adopted for Salmonella by the Salmonella subcommittee in 1934.

The somatic O antigens are labeled with Roman numerals, while the specific flagellar H antigens are indicated with small letters of the alphabet. However, the numbers of H antigens soon exceeded the letters of the alphabet, and the later additions were given the symbols of Z_1, Z_2 and so on.

This method of classification is based purely on the antigenic factors, forming no part of the name of any given species or types. The Z strain was then tested with the serums of Dr. Kauffmann and according to the Kauffmann-White schema; the antigenic composition of the organism isolated in this case is as follows: IV, V:b → 1, 2. This corresponds to the structure of S. schottmülleri isolated from pus involving bone and is the first instance in which a complete identification of the organism is offered.[6]

2085 Adelbert Road.

4. White, P. B.: The Salmonella Group, Med. Research Council 4:86, 1929.

5. Kauffmann, F.: Centralbl. f. Bakt. (Abt. 1) 119:132 (Dec. 8) 1930; Zentralbl. f. d. ges. Hyg. 28:273 (Aug. 25) 1931; Commun. de l'Inst. sero. l'Etat Danois 20:177, 1939; Acta path. et microbiol. Scandinav. 17:429, 1940.

6. At the completion of this study, the abscess was again aspirated and the same organism was isolated.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. HOWARD A. CARTER, Secretary.

WESTERN ELECTRIC 4C AUDIOMETER ACCEPTABLE

Manufacturer: The Western Electric Company, 300 Central Avenue, Kearny, N. J.

The Western Electric 4C Audiometer is a screening type instrument by which it is possible to test the hearing of as many as forty persons at one time. The firm states that the apparatus is essentially a phonograph to which has been added telephonic apparatus. The phonograph is of the spring motor type with a magnetic reproducer. The magnetic reproducer picks up the vibrations originated by the record and transforms them into electrical vibrations, which are conveyed to a telephone head-set and the person or persons under examination hear the sound waves as if by telephone. All the necessary electrical energy is developed in the magnetic reproducer.

Western Electric 4C Audiometer.

Intensity of the speech sounds heard on the double faced specially made records decreases in small steps from a maximum to a minimum intensity; this process occurs four times in playing each side of the record. The first two series of numbers on each face are spoken in a woman's voice and the second two in a man's voice. Each decreasing series is composed of different numbers. The same rate of intensity attenuation is maintained in all eight series. Of the two records provided, one uses two digit numbers and is generally used for classes below the fifth grade; the other, with three digit numbers, is generally used for the fifth grade and above.

The individual being examined writes the numbers heard on a special recording sheet. A master sheet provided makes possible quick checking of the results.

An audiometer of this type cannot be judged in accordance with the requirements in the Council's adopted article "Minimum Requirements for Acceptable Audiometers." Since it is not a so-called pure tone audiometer, and the manufacturer does not claim it to be such, it is used only for screening purposes and not as a diagnostic instrument and is not accepted as such.

In investigating the instrument clinically a group of students entering college were tested for hearing loss in accordance with directions supplied by the manufacturer. The examination was a routine part of student health activities in a large university.

A group of men students (more than one hundred) was tested in the quietest room in the gymnasium building, and thirty of them were shown to have measurable hearing losses. When they were retested in a sound proofed room in the psychology laboratory, none of the thirty were found to have defective hearing. This points out the importance of having a very quiet room in which to conduct the tests.

The Council voted to accept the Western Electric 4C Audiometer for inclusion on its list of accepted devices as a device for assisting in testing the hearing of groups of individuals.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 North Dearborn Street - - - Chicago, Ill.

Cable Address - - - - "Medic, Chicago"

Subscription price - - - - Eight dollars per annum in advance

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SATURDAY, APRIL 11, 1942

THE ATLANTIC CITY SESSION

Last week THE JOURNAL published a statement from Undersecretary of War Patterson urging continuation of plans for the annual session of the Association in Atlantic City. Discussion as to the desirability of proceeding with all the plans for the Atlantic City session led officials of the Association to communicate also with the Secretary of the Navy. A letter just received from Commander Edward A. Hayes, special assistant to Secretary Knox, states that Secretary Knox requested him to give the assurance that it is their hope that the proposed annual meeting of the American Medical Association will be a great success. To use the exact expression of Secretary Knox,

"There is no doubt that our defenses along the entire Atlantic Coast will be greatly improved by June and I regard any danger to guests of Atlantic City from that source as insignificant."

As has been stated previously, the special issue devoted to the plans for the Atlantic City session will be THE JOURNAL for May 2. The programs are complete. Special symposiums related to problems of current medical interest and to military medicine and the contribution of visitors from some of the Latin American countries are assured. All the exhibit space available in the Scientific Exhibit has long since been assigned and practically all the space in the Technical Exhibits has already been taken.

CONTROL OF DRUGS AND MEDICAL SUPPLIES

Some of the most complicated and difficult questions confronting various agencies concerned with the most efficient conduct of the war effort have been those concerned with making available to all war agencies proper amounts of essential drugs, chemicals and materials used in medical supplies and at the same time meeting essential civilian needs. Innumerable professional and commercial interests have been involved in these problems. As the problems have arisen, various agencies in the federal government have been concerned with various aspects of these questions, so that correlation and coordination have been exceedingly difficult. Recently a preliminary conference was held by the Division of Medical Sciences of the National Research Council, to which a number of representatives of various agencies were called. A second conference, growing naturally from the first, was held in Washington April 3, at which definite action was taken leading to the establishment of a central committee to give consideration to each of the problems as they arise and thus to be able to advise all agencies as to basic facts necessary for the making of competent decisions.

The second conference was called largely as a result of a request received from Mr. J. S. Knowlson, director of the Division of Industry Operation of the War Production Board, who asked for the compilation of a list of drugs now scarce, an estimate as to scarce drugs essential to the national health, and the uses to which such drugs might be applied in order of their importance. It was recognized also that conditions change from day to day and certainly from month to month, so that a continuing body might be necessary and available for constant consultation.

In the conference called by the Division of Medical Sciences, representatives were present not only from the War Production Board, the Office of Price Administration, the Office of Defense Health and Welfare, the Office of Civilian Defense, the Federal Trade Commission, the Division of Medical Sciences of the National Research Council, the Army and Navy medical departments and the Office of Scientific Research and Development but also from the United States Pharmacopeia, the National Formulary, the American Drug Manufacturers Association and the American Medical Association. This conference adopted a motion reading:

> That it be recommended to the Division of Medical Sciences of the National Research Council that a representative committee be established to consider and advise on problems of drug and medical supplies and on their distribution; that this committee include liaison representatives from all federal agencies now concerned with this subject; that the committee consider all problems related to the supply of essential drugs and medical supplies with a view to conservation, increased production or substitution and with a view toward coordination and correlation of effort for efficiency in the maintenance of the public health and satisfaction of military needs.

Subsequent to receipt of this action, the chairman of the Division of Medical Sciences, Dr. Lewis H. Weed, appointed a committee and requested each of the federal agencies concerned to designate a liaison representative who will sit constantly with the committee appointed. The Committee on Drugs and Medical Supplies includes:

Dr. Walter W. Palmer, New York, Chairman:
Vice Chairman, Council on Pharmacy and Chemistry, American Medical Association;
Professor of Medicine, Columbia University Medical School.

Dr. Perrin H. Long, Baltimore:
Chairman, Committee on Chemotherapeutic and Other Agents, Division of Medical Sciences, National Research Council;
Professor of Preventive Medicine, Johns Hopkins University Medical School;
Member, Committee of Revision, United States Pharmacopeia.

Dr. Ernest E. Irons, Chicago:
Formerly member, Council on Pharmacy and Chemistry, American Medical Association;
Secretary, Board of Trustees, American Medical Association;
Professor of Medicine, Rush Medical College.

Dr. Morris Fishbein, Chicago:
Editor, THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION;
Member, Council on Pharmacy and Chemistry, American Medical Association;
Member, Board of Trustees, United States Pharmacopeia;
Chairman, Committee on Information, Division of Medical Sciences, National Research Council.

Mr. J. G. Searle, Chicago:
President, American Drug Manufacturers Association;
President, G. D. Searle & Company.

Mr. George W. Merck, Rahway, N. J.:
President, Merck & Company, Inc.

Dr. E. F. Kelly, Washington, D. C.:
Chairman, Board of Trustees, United States Pharmacopeia;
Secretary, American Pharmaceutical Association.

Dr. O. H. Perry Pepper, Philadelphia:
Chairman, Committee on Medicine, Division of Medical Sciences, National Research Council, ex officio.

Dr. Evarts Graham, St. Louis:
Chairman, Committee on Surgery, Division of Medical Sciences, National Research Council, ex officio.

The committee proposes to establish subcommittees familiar with the essential information that will be required regarding available supplies of various drugs and medical materials and the means of conserving such materials, of substituting for them and of increasing production as the needs arise.

THE LONGEVITY OF PHYSICIANS

Physicians always advise their patients how to live longer and better; they themselves often die prematurely of preventable or at least postponable causes. The prevalence of deaths from heart disease, particularly coronary disease, among physicians at relatively early ages has in recent years increased sharply. Coronary disease has come to be known among physicians as "doctors' disease." Doctors favor health supervision without waiting for illness to appear. The National Health Council and the American Medical Association in 1922 declared in favor of periodic health examinations of apparently healthy persons. The American Medical Association has published a manual[1] and a blank[2] in the hope of stimulating medical interest in periodic health examinations and several pamphlets[3] intended to interpret the idea to the layman. Nevertheless, except for insurance company and industrial periodic examinations, the idea has not become popular.

A new development is the Committee on Longevity, Class of 1900, College of Physicians and Surgeons, New York, which has organized for the purpose of prolonging the lives and improving the health of the one hundred surviving members of the class, which originally numbered one hundred and seventy-five graduates. Already the idea has received much publicity through editorial comments in New York papers. Superficially amusing, but basically significant, is this comment from an editorial in the New York *Sun*:[4]

> Laymen whom middle age prompts to think of such things are bound to be interested in the work of the Longevity Committee set up by the Class of 1900 of Columbia College of Physicians and Surgeons. These doctors should be able, if anybody can, to propagate the art of collective good health. Laymen will note with an understanding smile, however, one of the problems the Longevity Committee regularly meets as it conducts a monthly study of reports on physical examinations of the members. It finds that a good many doctors have this much in common with a good many laymen: they neglect their periodic examinations or delay in taking treatment.

If these physicians can stimulate others they may succeed in awakening a more lively interest among practicing physicians in periodic health examinations. At present medical and lay apathy in virtually equal parts explain the failure of the American people to adopt the sound and sensible idea of periodic health examinations as a means toward better and longer life.

Current Comment

PERSONNEL FOR THE ARMY AND NAVY MEDICAL DEPARTMENTS

The Procurement and Assignment Service for Physicians, Dentists and Veterinarians has been seriously engaged in clearing the names of physicians, dentists and veterinarians who have volunteered for service with the Army and Navy medical departments or with various other federal agencies. The tremendous demands made on the government printing office have somewhat delayed the printing of the enrolment form and questionnaire. The continuing demand for physicians makes it desirable therefore that physicians under 37 years of age continue to apply for enlistment in the Army and Navy medical departments.

The immediate needs of the Army and Navy medical departments and of the Air Force, as stated in previous issues of THE JOURNAL, will demand during the year 1942 approximately fifteen thousand or sixteen thousand additional physicians. Those now ready to make application need not delay, therefore, in submitting their names at once. Under the heading of Medicine and the War in this issue of THE JOURNAL appears an author-

1. Periodic Health Examination: A Manual for Physicians, Chicago, American Medical Association, 25 cents.
2. Periodic Health Examination Blanks, Chicago, American Medical Association, single copies 5 cents.
3. Height-Weight Table for Men and Women, Chicago, American Medical Association, 10 cents. What Is A Health Examination Anyway? by Haven Emerson, 10 cents. If I Keep My Health, by W. W. Bauer, 5 cents. That Annual Check-Up, by A. H. Aaron, 10 cents.
4. New York Sun, July 9, 1941.

ized statement by Rear Admiral Ross T. McIntire, Surgeon General of the United States Navy, indicating how physicians who wish to apply for commissions in the Navy may take action in that regard.

THE DISTINGUISHED SERVICE MEDAL

The Distinguished Service Medal of the American Medical Association will be presented for the fifth time at the Opening General Meeting during the annual session of the Association in Atlantic City, June 9. This medal was awarded, for the first time, in 1938 to Dr. Rudolph Matas of New Orleans, in 1939 to Dr. James B. Herrick of Chicago, in 1940 to Dr. Chevalier Jackson of Philadelphia and last year to Dr. James Ewing of New York. This award has come to be recognized as one of the most distinguished honors within the gift of the American Medical Association. The method of selection of the recipient of the Distinguished Service Medal is specifically defined in the By-Laws of the Association. Any Fellow of the Association may submit nominations, which should be sent, together with a record of the scientific services of the nominees, to the chairman of the Committee on Distinguished Service Award, Dr. A. A. Walker, 2250 Highland Avenue, Birmingham, Ala., or to the Secretary of the Association at 535 North Dearborn Street, Chicago. Of all nominations received by the committee, five are submitted to the Board of Trustees of the Association, from which the Board selects three to be submitted to the House of Delegates at its first meeting at the time of the annual session. Immediately on submission of the nominations by the Board of Trustees, the House of Delegates by official vote selects the recipient of the honor, to whom the Distinguished Service Medal is presented at the Opening General Meeting on the evening of the following day. An extended list of distinguished physicians nominated for this award will enable the Committee, the Board of Trustees and the House of Delegates, all of whom participate in the selection, to determine for 1942 a recipient of distinction, whose nomination will reflect favorably on himself and on the Association.

USELESS TANK TO BECOME USEFUL TANKS

At last the Cunningham tank is to serve some useful purpose. An Associated Press dispatch datelined Cleveland, March 31, states that this "giant shell ball . . . is being dismantled and its 1,000 tons of metal will go to the mills as scrap." The tank here referred to was originally constructed some thirteen years ago by the late Dr. Orval J. Cunningham of Kansas City, Mo., for the purpose of instituting his preposterous pressure treatment for diabetes, pernicious anemia and carcinoma. The million dollars required to build it was supplied largely by the industrialist Timken, manufacturer of bearings. Why do people of great wealth who are unacquainted with scientific fact and apparently unwilling to consult scientific authority so frequently support strange notions in the field of medical care? THE JOURNAL for May 5, 1928 carried a two and a half page report of all the details connected with the method of treatment. "To explain his alleged results," said THE JOURNAL, "Dr. Cunningham advances a thesis that is altogether without scientific proof." It added "Under the circumstances, is it to be wondered at if the medical profession looks askance at the 'tank treatment' and intimates that it seems tinctured much more strongly with economics than with scientific medicine?" Operated for several years on the unproved Cunningham thesis, it was noted in *Time* for Oct. 8, 1934 that

> James Henry Rand Jr., chairman-president of Remington-Rand (office equipment), had sufficient faith to entrust Mrs. Rand to Dr. Cunningham's aerotherapeutics. And their son James Henry Rand III, onetime University of Virginia medical student, had sufficient faith to understudy Dr. Cunningham for the past seven years. Last week young Mr. Rand bought Dr. Cunningham's sphere for $500,000, will henceforth operate it with the help of Dr. Carl William Iuler, 36, as the Ohio Institute of Oxygen Therapy.

Thus another industrial fortune was involved in this enterprise, which in the ensuing six years since its original construction had not accumulated the slightest bit of evidence of scientific worth. Fortunately the armed services of the United States will be able to find better use for the metal than it seems to have served.

CLINICAL ESTIMATION OF BLOOD PRESSURE

The recorded level of blood pressure, in addition to individual fluctuation, is affected by numerous technical circumstances, such as the nature of the apparatus and whether the measurement is made by auscultation or by palpation. In a new study of the accuracy of blood pressure recordings, Ragan and Bordley[1] compared auscultatory pressure measurements with intra-arterial pressure measurements one hundred and thirty-eight times in 51 adult subjects. They found that the agreement between the auscultatory and intra-arterial measurements of systolic pressure was affected both by the size of the subject's arm and by the contour of the pulse wave. They concluded, therefore, that the commonly employed clinical method of measuring blood pressure should not be considered a truly accurate procedure and that misinformation is particularly likely to be obtained in subjects with unusually large or unusually small arms. If the arm is small, the clinical estimate of the systolic pressure is likely to be too low; if the arm is large, the clinical estimate of both systolic and diastolic pressures is likely to be too high. The error in either direction may exceed 30 mm. of mercury. These workers believe, therefore, that statistical studies of the relationship between blood pressure and body weight should take into account the measurement of the circumference of the arm on the accuracy of the blood pressure measurements. These investigations add to the evidence already available that the clinical expression of blood pressures must be accepted conservatively and interpreted with caution.

1. Ragan, Charles, and Bordley, James, III: The Accuracy of Clinical Measurements of Arterial Blood Pressure, Bull. Johns Hopkins Hosp. 69: 504 (Dec.) 1941.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession.

PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

METHOD OF PROCUREMENT OF MEDICAL OFFICERS FOR THE U. S. NAVAL RESERVE

Rear Admiral Ross T. McIntire, surgeon general of the Navy, has submitted the following information:

Recruitment of medical officers for the U. S. Naval Reserve has been transferred from the office of the commandants of the naval districts to the directors of naval officer procurement, located in the cities listed. A physician desiring to apply for appointment in the Medical Corps of the Naval Reserve should communicate directly with the director of naval officer procurement in the location nearest his place of residence. A communication addressed to the director should contain full information regarding date of birth, medical school from which graduated, and professional attainments since graduation. In this communication the prospective applicant should request a circular of information for persons desiring appointment in the U. S. Naval Reserve, and application forms for such appointment.

The Procurement and Assignment Service does not act as a recruiting agency for the U. S. Navy. Applications for appointment in the Medical Corps of the U. S. Naval Reserve are cleared through the Procurement and Assignment Service by the directors of naval officer procurement. The only purpose of clearing through this service is to determine which applicants hold civilian positions essential to national defense, to another governmental agency, and those considered essential on teaching faculties of accredited medical and dental schools. Such individuals will not be offered commissions in the U. S. Naval Reserve.

If physicians fill out the new questionnaire blanks which are soon to be distributed by the Procurement and Assignment Service and indicate that they desire to apply for appointment in the U. S. Naval Reserve, their names will be submitted to the Bureau of Medicine and Surgery, which in turn will communicate with these physicians.

OFFICES OF NAVAL OFFICER PROCUREMENT

First Naval District, 150 Causeway Street, Boston.

Third Naval District, 33 Pine Street, New York.

Fourth Naval District, seventeenth floor, Widener Building, Philadelphia.

Fifth Naval District, Chevrolet Parts Building, Norfolk and Altamont streets, Richmond, Va.

Sixth Naval District, The Center, Marion Square, Charleston, S. C.

Seventh Naval District, Langford Building, 121 S.E. First Street, Miami, Fla.

Eighth Naval District, Louisiana Building, 217-227 Camp Street, New Orleans.

Ninth Naval District, Board of Trade Building, 141 West Jackson Boulevard, Chicago.

Eleventh Naval District, 850 Lilac Terrace, Los Angeles.

Twelfth Naval District, Federal Office Building, Civic Center, San Francisco.

Thirteenth Naval District, 117 Marion Street, Seattle.

Washington, D. C., 1320 G Street N.W.

THE BATTALION MEDICAL OFFICER

HAROLD R. CONN, M.D.,
Akron, Ohio

The battalion medical officer probably enjoys the most individualistic responsibility of any officer in the service. Where his colleagues attached to sorting stations, ambulance companies and evacuation hospitals have the advantage of contact and conference, he is likely to be alone at the time of greatest stress.

It is obligatory that the battalion surgeon be young, in perfect health and physically tough to withstand the rigors of active campaigning with his unit. He must master subjects foreign to his colleagues in the rear and, to mention a few, these include troop hygiene and sanitation, medical corps training and drill, map reading, orientation and something of tactics and the art of concealment. The training of his enlisted personell is a task of paramount importance, and there are many other fields to explore, such as gas proofing, the selection of sheltered havens where battle casualties may be protected, and the vital problem of feeding the wounded.

He may consider these exertions medical inactivity, but there will follow periods when all his skill will be required and the military routine will be less exacting than the professional requirements. These extraordinary demands will come during severe and sustained action and he must retain coolness and calmness and must show a near perfection of surgical judgment under the most adverse conditions. Surgical judgment is that indefinable but essential attribute compiled of just the right mixture of a stable nervous system, past surgical experience, common sense and an ever ready diagnostic ability. It seems a needless sacrifice; but wars are won by sending the best men to the front, for only the best possess the essential qualities necessary to insure victory.

The battalion medical officer's responsibilities make demands on his previous training but in surroundings and under conditions which exist nowhere in his past experience. He most certainly has never before been suddenly confronted with a half hundred or more

injuries running the gamut of head, chest, abdomen and extremities, nor has he ever before worked to the limit of his physical and mental capacities where all about him is chaos and confusion. True there is little in the routine but essential military training that fits him to meet this sudden and overwhelming activity, but experience can be simulated by military maneuvers and through special training from his regimental and division surgeons.

QUALIFICATIONS OF A FIRST LINE MEDICAL OFFICER

In fact, no greater duty rests on the division surgeon than to see that his first line officers are selected from men who show initiative and have had some civilian traumatic experience. They should be taught the routine and correct use of tourniquets and traction splints, the differentiation between traumatic and cerebral shock, and a profound appreciation of the effects of dehydration, exposure and hemorrhage on wounded men. In this training the time element should be stressed as all important. The rapid collection of wounded and their intelligent dispatch to the rear definitely determines the mortality rate of all except the trivial and the initially fatal injuries. Many problems will arise which never confront the physician in civilian practice, where the ever ready and fast ambulance delivers the casualty to the hospital receiving room usually within a matter of minutes, not hours, as may be the fact in war.

There exists the notion among young medical graduates that an appointment to operative surgical teams or to base hospitals offers opportunities to gain vast experience in chosen specialties, whereas being assigned as a battalion medical officer engenders an atrophy of previous education and experience. This is absurdly wrong.

With a few individual exceptions, the surgery in World War I taught the physician but little. As a member of an operating team he found that the injuries differed greatly from those seen in civilian life, and the technic of débridement (operative cleaning of the wound) was destructive rather than constructive. There was, moreover, no opportunity to observe the end results of operations done. In base hospitals the surgery was and will be done by a few men, and the junior officer will act as the equivalent of a house officer in a well organized civilian institution. Finally, between the surgical units operating behind the field of battle and the combat battalion there is little or nothing in the way of practical civilian medical experience to be acquired.

THE REAL TEST OF SKILL: BORDERLINE CASES

The battalion officer, on the contrary, after a period of military training may some day expect to find himself confronted with a number of injuries which would disorganize the largest civilian hospital in the United States. He may anticipate that in a relatively minor engagement 10 per cent of his battalion will be wounded. Considering the total casualties, one half will represent trivial and initially fatal wounds while the remaining half, or 50 per cent, will present the real test of skill. The mortality rate of this last group will be positively influenced by the ability, resourcefulness and courage of the medical officer.

It seems unnecessary to call attention to the fact that moribund patients should not be evacuated from the battalion aid station, yet this instruction had to be repeated again and again to the vast majority of battalion surgeons during their early weeks of real action in the last war. As physicians all of us have been trained not to usurp the powers of Providence but to attempt to save every patient against impossible odds and to keep trying until life is fully and completely lost. This principle cannot entirely endure on the battlefield. Even to the inexperienced medical officer it must be obvious that he will be confronted simultaneously with hopelessly wounded and with cases in which reasonably prompt treatment and evacuation will result in recovery. He must learn under the trying conditions of active combat to recognize promptly the fatally injured and emulate the calm impartiality shown by the judiciary when they pass sentence by refusing to clutter his limited evacuation facilities with the doomed. It is platitudinous to state that, no matter how good the surgical facilities and personnel may be in the rear, they cannot save mortally wounded and dead men. The borderline cases present the real test of ability. Many of these may be saved by proper deshocking, either prompt mobilization or immobilization awaiting reaction, all depending on the wound and the response to initial diagnosis and treatment.

In a lifetime of emergency surgery the physician will probably not be called on to make the decisions which were demanded daily of the battalion surgeon during such offensives as the Meuse Argonne. Questions as to whether to give more morphine or to withhold it, to continue deshocking by external heat and posture or attempt to rush the patient to a hospital, to loosen the tourniquet at the risk of death or to leave it tight and sacrifice a limb, to attempt to separate cerebral shock from traumatic shock, and to estimate the degree which cold, fright, dehydration, and exposure aggravated wounds were presented at times by the minute.

These are not flights of fancy but the cold reality which confronts the battalion surgeon hidden in a poorly lighted dugout or in a shell hole under fire in the dead of night without adequate help, with some of his own stretcher bearers wounded and with the field around him still covered with badly wounded but unrecovered men. There will be no blood pressure readings, no x-ray examinations and no pulse and respiration charts to help him. It should take but little imagination for the young officer to picture for himself the difference between this scene and the one in the hospital in which he trained, where an occasional casualty was brought in, where he had an abundance of professional assistance, superb nursing care, electric lights and blood transfusion available within ten or fifteen minutes after injury. The officer who feels that his professional talent will be wasted as a battalion surgeon simply hasn't been there.

It should be reemphasized that he must exercise not only coolness and good sense but shrewd diagnostic acumen under the most adverse conditions without the benefit of counsel and often after twenty-four hours or more of constant duty.

THE BUILDING OF MORALE

The morale of any battalion is very positively influenced by the ability and the élan of its medical personnel. Combat troops, however courageous, react splendidly to the knowledge that if wounded and helpless on the field they will somehow be recovered by the medical corps and will receive prompt, adequate and competent care. The outstanding records of many units can be partially credited to the courage and resourcefulness

of their supporting medical detachments. There is no place in either civilian or military professional activity where gratitude and devotion are so generously given as to a real doctor in action with combat troops.

After recovery and segregation in the battalion aid station or the collecting station the most common question asked the medical officer by the wounded is "How seriously am I hit?" or "Am I going to get well?" and the reaction on the part of the patient to a cheerful and reassuring response is one of the amazing phenomena of war wounds. It is second only to the dramatic reaction made by wounded men when placed in deshocking cabinets and external heat applied.

Every variety of injury needs special attention, but it should be recalled that during the first two years of the last war the mortality rate, not taking into account the amputation rate, of compound fractures of the femur was 83 per cent, a ghastly total which exceeded gunshot wounds of the head, the chest or the abdomen. When in 1916 the use of traction splints in the field as advocated by Sir Robert Jones was made a military order, the mortality of compound fractures of the femur was reduced to 27 per cent. The reduction was not so spectacular in the other compound fractures but it was sufficient to make it a military offense to ignore the dictum "Splint 'em where they fall."

THE DOCTOR IN ACTION

It is not the intent here to discuss the intriguing differentiation in the treatments of exposure, hemorrhage, acidosis and shock, for books have been written about the cause, symptoms and treatment of each individually. The battle casualty usually presents a combination of all of them, but the battalion surgeon will be amazed at the reactions of apparently desperately injured young soldiers to reassurance, traction splinting, morphine, external heat and hot fluids internally.

The treatment of infections and the chemotherapy of wounds by use of the sulfonamides likewise present special problems in instruction.

Once in action the days of paper forms, sanitary inspections and foot work are forgotten and the battalion officer becomes what he has studied and worked and hoped to be: a doctor in the full sense of the word. Among medical veterans the expression is common that if they go again they want to serve with troops and it is not only the excitement but the actual professional responsibility which inspires them.

Possibly good battalion surgeons are born or just happen, but certainly many can and must be made; for the whole medical organization behind them is dependent on their ability, while ahead of them the soldier places his trust and his life in their hands.

1144 East Market Street.

ENLISTED MEN BECOME ADMINISTRATIVE CORPS OFFICERS

Two hundred and twenty-four enlisted men of the medical department of the Army became second lieutenants, March 28, when they graduated from the officer candidate course at the Medical Field Service School, Carlisle Barracks, Pa., following a course of instruction. These men were selected to attend the school by reason of their excellent military records. Forty-nine of the candidates were regular army enlisted men, nineteen were from the National Guard and one hundred and fifty-seven entered the army through Selective Service. The majority of them had only one year or less of service, thirty-one had had two years and thirty-one others three years of service. One hundred and twenty-six members of the class had college degrees, eighteen were pharmacists and seven were lawyers. The new officers came from thirty-six different states. The diplomas were presented by Brig. Gen. Addison D. Davis, Assistant Surgeon General of the Army and commandant of the Medical Field Service School. The oath of office was administered by Major Thomas G. Hester, one of the senior officers of the medical administrative corps.

THE HOARDING OF FIRST AID MATERIALS

Director James M. Landis of the Office of Civilian Defense, Washington, D. C., has announced that a wave of hoarding of first aid material is sweeping the country and threatens to produce a serious shortage of surgical gauze, bandages and other essentials required by the army and the Emergency Medical Service of the Office of Civilian Defense. Millions of first aid kits, he said, are being installed in countless places where there is practically no likelihood that they will ever be used. This unlimited purchasing of first aid material is based on a wrong conception of air raid casualties, Dr. George Baehr, chief of the Office of Civilian Defense Medical Division, said. These casualties are usually of such severity that only trained emergency medical field units are competent to attend the injured at the site of the accident. Emergency medical field units composed of doctors, nurses and trained auxiliaries have been established in every community likely to be bombed, especially on our coasts, and these units are promptly available in all parts of the community, day and night. Air raid wardens will not be expected to care for the wounded in the event of air raids, but, because of the present misunderstanding, tens of thousands of air raid wardens are stocking up on first aid material and urging every one in their zone to do so. Many households are duplicating the materials already in their medicine cabinets which would be of little value for the major crushing injuries which are characteristic of air raids. A small kit has been designed which contains a few large shell dressings and can be worn on a belt for an air raid warden or a trained stretcher bearer. Mr. Landis said that the rapidly increasing wastage of gauze bandages and other first aid material is reaching alarming proportions.

ONE MILLION BLOOD DONORS REQUIRED

The program of the American Red Cross for supplying blood plasma to the armed forces has entered its second year of operation, 30,477 blood donations being reported for the first two weeks in March by Red Cross chapters maintaining donor centers. Inaugurated in February 1941 at the request of the surgeon generals of the Army and Navy, this project has expanded as rapidly as laboratory facilities to process plasma have become available. Donor centers are now operating in eighteen cities. Shortly after beginning the project, the Red Cross was requested to deliver 380,000 units of plasma by July 1942. For the year beginning July 1, 1942 the Army and Navy have requested the Red Cross to obtain an additional 550,000 units, making a minimum total of 930,000 units. To provide this total will require somewhat in excess of a million donors. According to Dr. G. Canby Robinson, director of the Red Cross Blood Donor Service, the present rate of donations will have to be maintained without letup and may even have to be increased. Red Cross blood donor centers are now in operation in New York, Philadelphia, Baltimore, Buffalo, Rochester, N. Y., Indianapolis, Detroit, Pittsburgh, St. Louis, Boston, Milwaukee, Cleveland, Chicago, San Francisco, Los Angeles, Cincinnati, Washington, D. C., and Brooklyn. Seven commercial laboratories have contracts with the government for processing plasma on a cost basis. The total number of donations during the first year of operations aggregated 82,857. The value of

blood plasma in the treatment of burns and wounds and in combating shock was amply demonstrated at Pearl Harbor. Surgeons on duty there state that many lives were saved through the use of plasma supplied by the local medical society, the American Red Cross and other agencies.

INSTRUCTION IN CHEMICAL WARFARE

A series of four day intensive courses for teaching the medical aspects of chemical warfare to qualified physicians is to be given at the University of Cincinnati College of Medicine, which was selected by the Office of Civilian Defense, Washington, D. C. In the first group which took this course, beginning February 23, there were about thirty physicians from New England, New York and the Middle Atlantic states. Another course was started on April 6 for physicians from other parts of the country. The course was organized by Dr. Leon Goldman of the department of dermatology and Dr. Robert A. Kehoe, director of the Kettering Laboratory.

A school for gas defense to train experts in the field of poisonous gases will be established at the University of Buffalo (N. Y.). It is being inaugurated at the request of the Erie County Defense Council, whose chairman, Erie M. Wheeler, has appointed Dr. Howard W. Post, assistant professor of chemistry at the university, to organize the course of instruction. Fifty teachers from high schools of Erie County will take the course to prepare themselves for instructing civilians in their communities. Dr. Post says that the course will consist of three Saturday afternoon and one evening classes with a total of twelve hours of instruction to be provided by seven instructors.

SERVICE CLUBS FOR AUSTRALIA

The American Red Cross has announced that a staff of eight welfare workers with the American troops in Australia will set up Red Cross service clubs to provide recreation, sleeping quarters and canteen service for men on leave in at least three Australian cities. In charge of each of the clubs will be a prominent American man and woman, a social worker and volunteers from American residents in Australia. Charles Gamble, American business man long resident in Australia, will be American Red Cross delegate, with headquarters in Melbourne, and director of all activities; Irving Williams of the Washington national staff will be field supervisor of the Red Cross Military and Naval Welfare Service in all military stations, and Albert Scott, formerly with the Near East Foundation, will be recreational supervisor. The Red Cross also said that three million surgical dressings made by women volunteers have been shipped to the Australian Red Cross for use in Australian hospitals.

ALLOCATION OF EQUIPMENT FOR CIVILIAN DEFENSE

The first allocation of fire fighting equipment, gas masks, stretchers and cots under the recent $100,000,000 Congressional appropriation for civilian defense will be made principally to certain cities within 300 mile coastal strips which are regarded as "target areas," a memorandum of plans released by James M. Landis, director of the Office of Civilian Defense, states. Communities will be selected largely on the basis of priorities established by the War and Navy departments. Three basic considerations will be used in determining priorities among communities: likelihood of attack, vulnerability and importance of war production of manufacturing plants in the communities. In urging communities not to send requests for requisitions for supplies to the headquarters of the Office of Civilian Defense in Washington, Mr. Landis says "Allocations of protective supplies must and will be made according to plans arrived at in cooperation with the military experts of the War Department. Under the law we cannot make allocation on any other basis and we will be unable to give consideration to the requests of individual localities at variance with such a plan."

Tentative allotment of equipment for medical teams and casualty stations will be made on the basis of (*a*) one team for each 5,000 of population, (*b*) one casualty station for each two medical teams, stretchers on the basis of four for each 5,000 of population, cots on the basis of twelve for each 5,000 of population, first aid belts on the basis of nine for each 5,000 of population, and identification tags for medical kits on the basis of one book of twenty tags for each 5,000 of population.

Procurement of all the equipment and supplies will be by appropriate agencies of the War Department.

REPORTING OF REGISTRANTS WITH VENEREAL DISEASE

The following memorandum has been received from the City of New York Department of Health:

Current Selective Service medical and serologic examinations emphasize the value to the practitioner of prompt compliance with the venereal disease provisions of the sanitary code. All registrants found infected with syphilis, gonorrhea, chancroid or lymphogranuloma venereum are referred by the Selective Service administration to the health department for further consideration. Where the registrant is under medical care by his physician and has been properly reported, no further action is taken. Where men are not under medical care the need for rehabilitation, as well as for public health control of communicable disease, leads to intensive follow-up procedure to place all infected registrants under treatment. This follow-up is made by the health department by arrangement with the Selective Service.

Each physician should review his venereal disease cases and submit the required case report (417V) to minimize the possibility of inconvenience to him and particularly to his patients eligible for military service. A supply of the required forms and the regulations for reporting may be secured by application to the Bureau of Social Hygiene, Room 328, 125 Worth Street, New York City, or by telephoning Worth 2-6900, extension 252.

REHABILITATION PROGRAM

The Baltimore City Medical Society sponsored a meeting at Osler Hall, Baltimore, March 13, which was entirely devoted to the subject of the physical rehabilitation of Selective Service registrants. Brig. Gen. Lewis B. Hershey, National Director of Selective Service, discussed "The Program of Selective Service in the Rehabilitation of Registrants"; Col. Leonard G. Rowntree, Chief, Medical Division, National Selective Service Headquarters, "Medical Aspects of Rehabilitation"; Col. Henry C. Stanwood, State Director, Maryland Selective Service System, "Administrative Responsibilities of Rehabilitation," and Lieut. Col. Amos R. Koontz, State Medical Director, Maryland Selective Service System, "Brief Outline of the Maryland Rehabilitation Plan."

Maryland has been selected by the National Selective Service System Headquarters as the first state in which to try out the physical rehabilitation plan announced by the President. The plan involves the correction of remediable defects which disqualify registrants for general military service. The correction of defects is to be done by designated physicians and dentists at government expense.

THE BOTKIN HOSPITAL IN MOSCOW RECENTLY BOMBED

The largest medical unit iq the Soviet Union, the Botkin Hospital in Moscow, was severely bombed during the German raids several months ago, but not 1 patient was killed, according to the Moscow radio correspondent of the New York *Times*. The Botkin Hospital had two thousand, three hundred and fifty beds available to war wounded, and until the Germans retreated from Moscow it was practically a front line hospital. At present the medical center is acting as a base hospital and even is resuming medical courses for the training of field surgeons. The *Times* correspondent said that medical supplies from the United States had been arriving and that a considerable proportion of the material from the Allies was going to new military hospitals being established elsewhere in the Soviet Union.

AMERICANS IN CANADIAN ARMED FORCES

Americans serving with the Canadian armed forces will be given an opportunity to enlist in the U. S. Army or Navy under an agreement with Canada, the State Department has announced. About fifteen thousand Americans are now in the Canadian services. The agreement provides that Canadian authorities, not later than April 6, shall inform all Americans who have lost their citizenship by taking an oath of allegiance on enlistment in the Canadian armed forces that they may regain their citizenship and enlist in the American services. April 20 was set as the limit for transfer applications.

SUPERINTENDENT OF NURSES PROMOTED TO COLONEL

The Superintendent of the Army Nurse Corps, Mrs. Julia O. Flikke, was promoted on March 14 to the grade of Colonel and the Assistant Superintendent of the Nurse Corps, Florence A. Blanchfield, to Lieutenant Colonel, for the duration of the war. Colonel Flikke, a native of Wisconsin, entered the school of nursing of Augustana Hospital, Chicago, in 1912, took postgraduate work at Columbia University, joined the Army Nurse Corps in 1917 and soon after was ordered overseas. She was appointed superintendent of the Army Nurse Corps with the relative rank of major in 1937. Colonel Flikke has served at various army stations, including the Philippines and Tientsin, China. Lieutenant Colonel Blanchfield is a native of West Virginia and graduated in nursing from the Southside Hospital in Pittsburgh, entering the Army Nurse Corps in 1917. She did postgraduate work at Johns Hopkins Hospital, Baltimore, and has served in France, China and the Philippines.

GEN. FREDERICK RUSSELL RECEIVES THE SNOW AWARD

Brig. Gen. Frederick F. Russell, U. S. Army Medical Reserve Corps, received the William Freeman Snow Award for distinguished service to humanity in the social hygiene field at the annual meeting of the American Social Hygiene Association in Boston, February 3. General Russell was for many years a member of the medical corps of the Army. He played a leading role in introducing antityphoid vaccination in the Army, carrying on this work at the time he taught bacteriology in the Army Medical School. The Snow Award was made in recognition of General Russell's work in organizing the syphilis and gonorrhea control program in the Army in the first world war, which it is said has become the basis of the present army program in this field. The two former recipients of this award were Gen. John J. Pershing and Surg. Gen. Thomas Parran of the U. S. Public Health Service.

THE WELLCOME MEDAL AND CASH AWARD

The Association of Military Surgeons of the United States announces the competition for 1942 for the Sir Henry Wellcome medal and cash prize of $500 for the best paper on "Measures of Preventive Medicine Recommended by the Federal Medical Services to Insure the Maximum Improvement of the Selectee of 1961 over Him of 1941." The competition is open to all medical department officers of the Army, Navy, Public Health Service, organized militia, U. S. Veterans Administration, U. S. volunteers and those in the reserves, commissioned medical officers of foreign military services and all members of the association, except that no one person shall be awarded a prize more than once in these prize competitions. Competitors must send five copies of their paper unsigned by their true name but identified by a device or nom de plume to the Secretary of the Association of Military Surgeons of the U. S., Army Medical Museum, Washington, D. C., to arrive not later than Aug. 31, 1942 and accompanied by a sealed envelop marked on the outside with the fictitious name or device assumed by the writer and enclosing his true name, title and address. The essays must have a minimum of three thousand words and must not exceed ten thousand words.

ONE WEEK INSTITUTES FOR NURSES

Under the sponsorship of the American Red Cross, the Michigan Department of Health, the Michigan State Nurses Association and the W. K. Kellogg Foundation, one week institutes are being given at Clear Lake Camp near Battle Creek, Mich., to provide an opportunity for Michigan nurses to brush up on their technic for teaching home nursing classes in connection with the civilian defense program. The first of the institutes was held the week of March 9, the second began March 16, and others will follow. The Kellogg Foundation provides meals and lodging for nurses in attendance.

BALTIMORE'S DECONTAMINATION CORPS

"Sniff" sets will be used to teach one hundred and sixty-one employees of the Bureau of Street Cleaning of Baltimore how to recognize war gases as a part of their instruction in methods of gas decontamination, the Baltimore *Sun* reports. In the group there will also be seventy-five chemists and one hundred and forty-two additional citizens. These will comprise the city's decontamination corps. Decontamination of streets and lawns and first aid for victims of war chemicals will be taught those taking the course.

BLOOD DONOR DAYS

The facilities of the Wayne University Student Health Service, Detroit, beginning February 16, were turned over to a Red Cross mobile unit for the receiving of contributions of blood for as many days as are necessary to care for the volunteers. Two hundred students and faculty contributions may be accommodated by these facilities each day. The student chairman of the project is Louis McGuiness.

TEACHERS OF AIR RAID WARDENS

The Civilian Defense Institute at Wayne University, Detroit, which was organized last month, trains school teachers and industrial leaders to be teachers of air raid wardens. A class of one hundred and sixty graduated on March 12, and more than two hundred and fifty persons are studying defense organization, blackout, air raid precautions, elementary camouflage, and fire and gas defense.

CAPTAIN STEPHENSON RETURNS FROM LONDON

Capt. Charles S. Stephenson, Medical Corps, U. S. Navy, recently attached to the American embassy in London, England, addressed a meeting of the Caduceus Post of the American Legion, New York City, at the Seventh Regiment Armory, March 25, on "Military Medical Observations in England."

DR. TURNER ON DUTY IN SURGEON GENERAL'S OFFICE

Lieut. Col. Thomas B. Turner, medical reserve corps, U. S. Army, professor of bacteriology at Johns Hopkins School of Hygiene and Public Health, has been ordered to active duty in the Surgeon General's Office, Washington, D. C., as chief of the subdivision of venereal disease control.

COLONEL HILLMAN PROMOTED TO BRIGADIER GENERAL

The President sent to the Senate, January 28, for confirmation the promotion to the temporary grade of brigadier general of Col. Charles C. Hillman, M. C., U. S. Army. Colonel Hillman, who has been in charge of the professional service division of the Office of the Surgeon General, will continue his tour of duty in that office.

DR. LEE ADDRESSES ARMY OFFICERS

Dr. Roger I. Lee, Boston, member of the Board of Trustees of the American Medical Association, addressed the medical department officers in Washington, D. C., February 16, at the Army Medical Center on "The Significance and Course of Borderline Abnormalities of Blood Pressure."

ORGANIZATION SECTION

OFFICIAL NOTES

THE ATLANTIC CITY SESSION

Hotel Reservations

Fellows of the Scientific Assembly of the American Medical Association who expect to attend the annual session of the Association in Atlantic City, June 8-12, are urged to make their hotel reservations at the earliest possible time. For such reservations, please send your first, second and third choice for a hotel reservation to Dr. V. Earl Johnson, Chairman of the Hotel Committee, 16 Central Pier, Atlantic City, N. J., in accordance with the information contained on advertising page 48 of this issue of THE JOURNAL.

MEDICAL LEGISLATION

STATE MEDICAL LEGISLATION

New York

Bills Introduced.—S. 1156, to amend the workmen's compensation law, proposes to eliminate the provision of the present law authorizing an employee or carrier to select and pay for a physician to participate in an examination of the injured employee. S. 1217 and A. 1593, to amend the labor law, propose to limit the hours of employment of an ambulance chauffeur or driver in a private hospital or other private institution to not more than eight hours a day or forty-eight hours a week except in event of an extreme emergency. S. 1271 and A. 1613, to amend the public health law, propose to authorize the commissioner to establish temporary health districts, whenever the protection of the public health so requires, and to promulgate temporary health regulations to be effective in such districts. S. 1325 and A. 1668, to amend the education law, propose to make it unlawful for any corporation, joint stock association, company, association or individual doing business under a certificate of trade name to practice podiatry. A. 1386, to amend the general business law, provides for the regulation of nurses registries throughout the state. The term nurses registry means the business of conducting a registry, office or other place for the purpose of counseling, offering, procuring, promising or attempting to procure employment or engagements of any kind, for registered professional nurses, or for licensed practical nurses, or for dietitians, anesthetists, medical secretaries or medical technicians and for which a fee is exacted or charged. A. 1399, to amend the labor law, provides that, in cities having a population of over one million, ambulance drivers shall not be permitted to work more than eight hours a day or more than forty-eight hours a week or more than six days a week except in case of certain specified emergencies endangering life or property. A. 1642, to amend the labor law, provides that unemployment compensation benefits shall not be denied to any person who has become incapacitated through illness and who had previously qualified for benefits. A. 1673, to amend the labor law, proposes that any employee, registered as totally unemployed, who is capable of employment at the time of registration, and subsequently becomes sick, shall not be prevented from obtaining benefits under the unemployment compensation act due to inability to accept employment.

Bill Passed.—The following bill has passed the assembly: A. 964, to amend the insurance law, proposes to authorize the writing of insurance against an obligation of the insurer to pay medical, hospital, surgical and funeral benefits to injured persons, irrespective of legal liability of the insured.

Rhode Island

Bills Introduced.—H. 833 proposes to repeal the existing law relating to the licensing and regulation of the practice of veterinary medicine, surgery and dentistry. H. 836, to amend the law relating to the licensing and regulation of hair dressers and cosmetic therapists, proposes, among other things, that "hairdresser and cosmetician" shall include a person who, by the use of the hands or appliances or of cosmetic preparations, antiseptics, tonics, lotions, creams, powders, oils or clays, engages, with or without compensation, in massaging, cleansing, stimulating, manipulating, exercising or beautifying or in doing similar work on the neck, face or arms or who removes superfluous hair from the body of any female person.

WOMAN'S AUXILIARY

California

Capt. Samuel Ross of the Fresno Air Base was guest speaker at a recent meeting of the Fresno County medical auxiliary at the University-Sequoia Club. On January 5, the group met to discuss the part which doctors' wives might play in the defense program. It was decided that a complete file of the qualifications of members and a call list be kept. Entertainment was furnished by a chorus made up of members of the evening adult education classes of Fresno High School.

Georgia

About 500 health leaders of Fulton, DeKalb and Rockdale counties attended the health education meeting sponsored by the Woman's Auxiliary to the Fulton County Medical Society recently at the Crawford W. Long Nurses' Home in Atlanta. Mrs. Jeff Richardson, chairman of health films, explained how these films can be obtained by any one interested. The new sound films and film projectors in each district are owned by the Medical Association of Georgia. Dr. W. A. Selman, councilor for the Fifth District, talked on what the association hopes to accomplish for the health of Georgians by showing the films.

The Woman's Auxiliary to the Fulton County Medical Society met recently in Atlanta with Mrs. Murdock Equen, president, presiding. Mrs. Harry Rogers, chairman of Research in Romance of Medicine, had charge of the program, which featured a talk by Dr. Sterling Clairborne on vitamins. Mrs. Allen H. Bunce gave a report on the recent meeting of the Woman's Auxiliary to the Southern Medical Association, held in St. Louis.

New Jersey

At the January meeting of the Camden County auxiliary, the members voted to increase the annual dues from $2 to $3. Fifty defense stamp booklets, each containing one 25 cent stamp, were sold to members at this meeting. On January 19 the auxiliary attended a "Friendship Dinner" in Camden given to encourage cooperation of the auxiliary with the women's clubs and other organizations.

The Tuberculosis Hospital at the medical center in Jersey City entertained thirty members of the Woman's Auxiliary to the Hudson County Medical Society in January. The auxiliary decided to buy a $1,000 defense bond. Pamphlets were distributed to each member to promote individual purchase of defense bonds and stamps.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARKANSAS

State Medical Meeting.—The Arkansas Medical Society will hold its sixty-seventh annual meeting in Hot Springs National Park, April 27-29, under the presidency of Dr. H. Fay H. Jones, Little Rock. Sessions will be held at the Arlington Hotel. A public meeting will be held Monday evening. Out of state speakers at the scientific sessions will include:

Dr. Winthrop M. Phelps, Baltimore, The Problem of Cerebral Palsy and Its Relation to Rehabilitation and Public Health.
Dr. Walter S. McClellan, Saratoga Springs, N. Y., The Importance of Spas in Military and Civilian Defense Program.
Dr. William J. McMartin, Omaha, Goldblatt Kidney.
Dr. Lawrence T. Post, St. Louis, Aniseikonia.
Dr. Charles M. Wilhelmj, Omaha, The Etiology and Treatment of Traumatic Shock.
Mr. John M. Pratt, Chicago, National Physicians' Committee for the Extension of Medical Service.
Dr. Delmas K. Kitchen, Detroit, Sex Hormones: Physiology, Diagnosis, Therapy.

A memorial session will be held on Tuesday at the First Presbyterian Church.

CALIFORNIA

Industrial Accident Section.—The Industrial Accident Section of the Los Angeles County Medical Association observed the twentieth anniversary of its founding in March. The *Bulletin* of the Los Angeles County Medical Association recalls that in 1929 the group instituted an educational program to standardize the treatment of industrial casualties and began the publication of scientific papers for that purpose.

University President Honored.—A life fellowship in the Thomas A. Edison Foundation for the Advancement of Science and Education has been conferred on Robert Gordon Sproul, LL.D., Berkeley, president of the University of California, *Science* reports. The award is given to "only a few outstanding Americans in the fields of medicine, science, art and education, who have made some real contribution to human welfare." Dr. Sproul has been president at California since 1930. Until the recent appointment of Dr. Francis S. Smyth as dean of the University of California Medical School, San Francisco, Dr. Sproul had been acting dean.

CONNECTICUT

Dr. Meader to Direct Cancer Research.—Ralph G. Meader, Ph.D., assistant professor of anatomy, Yale University School of Medicine, New Haven, has been appointed assistant to the director of the Jane Coffin Childs Memorial Fund for Medical Research at Yale and will supervise the fund's activities during the absence of Lieut. Col. Stanhope Bayne-Jones, director, who has reported for duty in the Office of the Surgeon General, Washington, D. C. The Childs Memorial Fund was established at Yale in 1937 and is primarily concerned with cancer research.

Rehabilitation Clinics.—The state department of education, the state medical society and the Manufacturers Association of Connecticut are cooperating in a series of rehabilitation clinics for the purpose of employing physically handicapped persons in Connecticut factories. Groups of crippled and otherwise handicapped persons registered with the rehabilitation service of the department of education will be brought together in clinics at several points within the state, examined by a team of physicians provided by the state medical society and classified according to their occupational capabilities. Yale University is making available a staff of psychologists to administer aptitude and performance tests. The Manufacturers Association of New Haven County will be represented by a committee of employers who will aid in determining occupational fitness. A representative of the U. S. Employment Service for Connecticut will be present to facilitate referrals to employers. The applicants will then be interviewed by employment managers of Connecticut factories and placed in jobs they will be able to fill. New Haven was selected for a clinic area as an initial step. On March 15 an all day clinic was held for a minimum of twenty physically handicapped persons. Examinations were made by a group of specialists selected by the state medical society.

GEORGIA

State Medical Meeting in Augusta.—The Medical Association of Georgia will hold its annual meeting at the Bon Air Hotel, Augusta, April 28-May 1, under the presidency of Dr. Allen H. Bunce, Atlanta. The program will include symposiums on public health problems, psychoses and psychoneuroses, eye, ear, nose and throat problems and the roentgenologic problems of the gastrointestinal tract. Speakers include:

Dr. Charles W. Roberts, Atlanta, Human versus Material Values in Medical Practice.
Drs. Frank H. Lahey, Boston, Medical Problems: National, Economic and Scientific.
Dr. Thomas J. Collier, Atlanta, Crawford Williamson Long, 1815-1878.
Dr. Robert C. Major, Atlanta, Obliteration of Chronic Empyema Cavities.
Dr. Reuben M. Reifler, Macon, Fungous Infections of the Skin.
Drs. Robert F. Norton and John T. McCall Jr., Rome, Treatment of Lung Abscess with Alcohol Intravenously.

The Abner Wellborn Calhoun Lecture will be delivered Wednesday by Dr. Perrin H. Long, Baltimore, professor of preventive medicine, Johns Hopkins University School of Medicine, Baltimore, on "Sulfonamide Therapy: Its Applications and Limitations."

IDAHO

Society News.—The Southwestern Idaho Medical Society was addressed in Boise, February 20, by Drs. Frank M. Sprague, Boise, on "Evaluation of Physical Fitness" and William W. Bauer, Director, Bureau of Health Education, American Medical Association, Chicago, "Medical Relationships to War Activities."——Dr. Dan C. McDougall discussed "Acrodynia or Pink Disease" before the Pocatello Medical Society, Pocatello, recently.

ILLINOIS

Public Health Conference.—The second annual public health conference of the Illinois Public Health Association will be held at the Hotel LaSalle, Chicago, April 20. One general session will be devoted to "Integration of Public Health and Civilian Defense." On Monday evening Dr. Roland R. Cross, state director of health of Illinois, will give an address on "Public Health in War Time" and Carl E. Buck, Dr.P.H., New York, of the American Public Health Association, "The Future of Public Health in Illinois." The luncheon session on Tuesday will be addressed by Dr. Morris Fishbein, Editor of THE JOURNAL, on "The Effect of the War on Public Health Personnel and Programs." There will be round table and panel discussions, one session for milk sanitarians and a joint bacteriology and sanitary engineering session.

Chicago

Lilly Prize Awarded to Biochemist.—The Eli Lilly prize of $1,000 in biologic chemistry has been awarded to Earl A. Evans Jr., Ph.D., associate professor of biochemistry, University of Chicago, for his work which "revolutionizes thinking about the role of carbon dioxide in the animal body." Dr. Evans received his Ph.D. at Columbia University, New York, in 1936. He was assistant pharmacologist at the Johns Hopkins University School of Medicine, Baltimore, 1931-1932; assistant in endocrine research, University of Chicago, 1932-1934. He became instructor in biochemistry in 1937, assistant professor in 1939 and associate professor, July 1, 1941.

War Conference for Protection of Industrial Workers.—A war conference for the protection of workers in industrial plants was held at the Stevens Hotel, April 9-10, under the auspices of the Office of Civilian Defense of the Chicago Metropolitan Area in cooperation with the Chicago Association of Commerce and the Illinois Manufacturers' Association. The purpose of this meeting was to acquaint operators of factories, warehouses, stores and all other kinds of industrial plants with the problems of plant protection they are likely to meet under war conditions and to advise them of the kinds of internal organization they may set up in order to mesh properly with the Office of Civilian Defense organization in the metropolitan area. The following problems were discussed, among others: enemy attack by air raid or gas; sabotage, espionage and other fifth column activities; accidents, fire and other industrial hazards made acute by sustained peak production; emergency medical, hospitalization and medical services; emergency communications and guard organizations, and identification systems. Among the speakers were:

Mayor Edward J. Kelly, U. S. Coordinator of Civilian Defense, Chicago Metropolitan Area.
Sterling Morton, president, Illinois Manufacturers' Association.
Dr. Morris Fishbein, Editor, THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.
Dr. Herman N. Bundesen, president, Chicago Board of Health.
Dr. Harry E. Mock, chairman of Medical Advisory Council, Committee on Industrial Health, Chicago Metropolitan Area.
Bennett S. Chapple Jr., Pittsburgh, Emergency Defense Coordinator, Carnegie-Illinois Steel Corporation.

MAINE

Cooperative Program for Blood Banks.—Fourteen hospitals in Maine are cooperating in the first integrated system of blood plasma banks for civilian protection in New England communities, according to the state medical journal. Under a plan drawn up by the faculty of Tufts College Medical School, Boston, communities will receive protection in proportion to the amount of blood they donate. Collection depots will be set up in each of the fourteen community hospitals which will forward the blood to the Central Maine General Hospital in Lewiston for extraction of the plasma. On its return the plasma will be stored in the local hospital for emergency use. The Lewiston plan provides for retention of about 10 per cent of the plasma at the regional center, which will be available for use in any community which suffers a major disaster. Local hospitals in turn may retain for one or two weeks several units of whole blood for use in direct transfusions and especially for immediate protection while first plasma supplies are being processed in Lewiston. Drs. Joelle C. Hiebert and Julius Gottlieb, medical superintendent and pathologist, respectively, of the Central Maine General Hospital, and William Dameshek, assistant professor of medicine at Tufts College Medical School and chief of the Blood Clinic at the New England Medical Center, are in charge of the program. The hospitals in the Lewiston network include:

Central Maine General Hospital, Lewiston.
St. Mary's General Hospital, Lewiston.
Augusta General Hospital.
Bath Memorial Hospital.
Brunswick Hospital.
Camden Community Hospital.
Knox County General Hospital, Rockland.
Rumford Community Hospital.
Redington Memorial Hospital, Skowhegan.
Sisters Hospital, Waterville.
Thayer Hospital, Waterville.
Miles Memorial Hospital, Damariscotta.
Franklin County Memorial Hospital, Farmington.
St. Andrews Hospital, Boothbay Harbor.

MARYLAND

Dr. Hugh Young to Retire.—Dr. Hugh H. Young, professor of urology, Johns Hopkins University School of Medicine, Baltimore, and director of the Brady Urological Institute of Johns Hopkins Hospital, Baltimore, will retire at the end of the present academic year, June 30, with the title professor emeritus of urology. He will retain offices in the Brady Institute. Dr. Young graduated at the University of Virginia Department of Medicine, Charlottesville, in 1894. He has been associated with Johns Hopkins since 1895. In 1909 he was president of the American Association of Genito-Urinary Surgeons and of the American Urological Association, and of the Medico-Chirurgical Faculty of Maryland in 1911. In 1917 Dr. Young was director of urology of the American Expeditionary Forces, becoming senior consultant in 1918. In 1929 he was named chairman of a state aviation committee which had been provided for by the legislature. In 1941 he was one of four recipients of the first award of the septennial prize of the Amory Fund for contributions to treatment and cure of diseases of the genitourinary system. The fund is distributed through the American Academy of Arts and Science.

MISSOURI

Dinner for Honorary Members.—The Jasper County Medical Society recently gave a dinner for its honorary members, Drs. Robert L. Neff, Robert M. James and William S. Loveland, Joplin, and Everett Powers, Carthage. Dr. William R. Gaddie, Duenweg, also an honorary member, died on January 11.

The Carman Lecture.—Dr. Leo George Rigler, professor of radiology, University of Minnesota Medical School, Minneapolis, delivered the annual Russell D. Carman Lecture in St. Louis, February 24, under the auspices of the St. Louis Society of Radiologists. His subject was "Roentgenological Diagnosis of Acute Abdominal States."

Memorial for Pioneer Physician.—On March 28 a granite headstone was unveiled at the grave of Dr. Joseph Nashe McDowell in Bellefontaine Cemetery. The stone was made possible by the contributions from about two hundred physicians and is a memorial from the class of 1895 of Missouri Medical College, St. Louis. The stone was unveiled by Miss Rebecca Duane Mastin, daughter of Dr. and Mrs. Edward V. M. Mastin, St. Louis, and great-great-great-granddaughter of Ephraim McDowell, the uncle of Joseph Nashe McDowell. Philip A. Shaffer, Ph.D., dean of Washington University School of Medicine, and George R. Throop, Ph.D., chancellor of the university, spoke at the ceremonies. Dr. McDowell came to St. Louis from Cincinnati, where he had been associated in the Cincinnati College of Medicine. He established the medical department of the Kemper College, later changed to the Missouri Medical College.

NEBRASKA

Personal.—Dr. James A. Burford has resigned as superintendent of the Nebraska Institution for Feebleminded at Beatrice; Harold Peterson, secretary of the state board of control, is the new superintendent.——Dr. Charles L. Fahnestock, Lincoln, was appointed supervisor of the state WPA public health projects on February 1.

Course on Obstetrics and Pediatric Care.—A series of lectures on obstetrics and pediatrics will be held at different centers throughout the state from April 13 to April 24 under the auspices of the state medical association and the state department of health. Lecturers will be Drs. Norman R. Kretzschmar and Harry E. Towlsey, associate professors of obstetrics and pediatrics, respectively, University of Michigan Medical School, Ann Arbor. The series will open in Alliance on April 13 and continue at the following places: Scottsbluff, April 14; North Platte, April 15; McCook, April 16; Grand Island, April 17; York, April 20; Fremont, April 21; Norfolk, April 22; Nebraska City, April 23, and Falls City, April 24.

NEW JERSEY

Immunization Program.—March 30 marked the start of a program among preschool children in Newark for the administration of a serum designed to provide simultaneous immunization against diphtheria and whooping cough, according to the New York *Times*. Trial tests for a period of eighteen months carried out by Dr. Henry Simon, head of the respiratory bureau of the city department of health, were said to be beneficial to 840 children. The *Times* reported that there have been no deaths from diphtheria in Newark during the last two years during the city's concentrated immunization program. Among the 2,000 children afflicted with whooping cough annually there are an average of eight deaths. The service is to be free, but parents desiring to do so may take the children to family physicians.

NEW YORK

Course on Sulfonamide Therapy.—The Medical Society of the State of New York and the state department of health have arranged a course of three two hour sessions on sulfonamide therapy for the Orange County Medical Society, to be be given at the Elizabeth A. Horton Memorial Hospital, Middletown. On May 12 Drs. Alexander D. Langmuir, Peekskill, and Frank Glenn, New York, will discuss "Behavior of Sulfonamides in the Body and Principles for Their Use" and "Local and Internal Use of Sulfonamides in Surgery." On May 19 Drs. Thomas F. Laurie, Syracuse, will speak on "Treatment of Genitourinary Infections in the Male" and Robert Gordon Douglas, New York, "Sulfonamides in Obstetrics and Gynecology." On May 26 Drs. L. Whittington Gorham, Albany, and Harry Balkwin, New York, will discuss "Treatment of Pneumonia" and "Treatment of Meningitis" respectively.

New York City

The Seventh Harvey Lecture.—Dr. Philip D. McMaster of the Rockefeller Institute for Medical Research will deliver the seventh Harvey Society Lecture of the current series at the New York Academy of Medicine, April 16. He will speak on "Lymphatic Participation in Cutaneous Phenomena."

Fund for Psychiatry.—Under the will of the late Dr. Menas S. Gregory, New York University College of Medicine has received a fund of $40,000. Twenty thousand dollars will be used to establish an annual lectureship and the remaining $20,000 will be given toward the endowment of a professorship in the department of psychiatry. Dr. Gregory was for many years professor of psychiatry at the medical school.

Musical Society.—The Doctors Musical Society of Brooklyn will offer its sixth concert at the Grand Ballroom of the Hotel St. George, Brooklyn, May 13, under the auspices of the Medical Society of the County of Kings and the Academy of Medicine of Brooklyn, Committee on Social Activities, in cooperation with the Hotel St. George. Proceeds will go to the mobile canteen unit for Brooklyn. Myron Levite will conduct.

OHIO

Physician Named to Welfare Post.—Dr. Charles T. Dolezal, assistant clinical professor of medicine, Western Reserve University School of Medicine, has been appointed welfare director of Cleveland. According to the state medical journal, this is the first time that a physician has been named to the position. Dr. Dolezal graduated at Western Reserve in 1926.

Dr. Bigelow Named Acting Dean at Ohio State.—Dr. Leslie L. Bigelow, clinical professor of surgery at Ohio State University College of Medicine, Columbus, has been appointed acting dean of the school. He succeeds Dr. Hardy A. Kemp, dean since Sept. 1, 1941, who as a major in the medical reserve corps of the U. S. Army has been called into active service at the Army Medical School, Washington, D. C. Dr. Bigelow has been a member of the faculty at Ohio State since 1914; he was named to his present professorship in 1938. He formerly served as president of the Columbus Academy of Medicine and the Ohio State Medical Association. Dr. Kemp will teach tropical diseases at the Army Medical School, it is reported.

State Medical Meeting in Columbus.—The Ohio State Medical Association will hold its ninety-sixth annual session at the Neil House, Columbus, April 28-30, under the presidency of Dr. Harry V. Paryzek, Cleveland. The program includes the following out of state speakers:

Dr. Chester S. Keefer, Boston, Chemotherapy.
Dr. Frederick A. Coller, Ann Arbor, Mich., Simplified Parenteral Feeding Before and After Operation.
Dr. Richard H. Freyberg, Ann Arbor, Recent Trends in the Treatment of Rheumatoid Arthritis.
Dr. William G. Lennox, Boston, New Light on Epilepsy and Migraine.
Dr. Alson E. Braley, New York, Sulfonamides in the Treatment of Ocular Infections.
Dr. Tinsley R. Harris, Winston-Salem, N. C., Hypertension: Some Recent Advances.
Dr. Lenard G. Rowntree, Colonel, M. C., U. S. Army, Washington, D. C., Health and National Defense.
Edmund V. Cowdry, Ph.D., St. Louis, Factors in Aging of the Human Body.
Dr. Frank H. Krusen, Rochester, Minn., Physical Therapy in General Practice.
Dr. Merrill C. Sosman, Boston, Observations on Curable Heart Disease.
Dr. John H. Lawrence, Berkeley, Calif., Clinical Applications of Artificial Radioactivity.

A feature of the meeting will be "quiz discussion" sessions covering chemotherapy, preoperative and postoperative care, nervous and mental diseases, nutrition and national defense, technical phases and clinical applications of plasma transfusions, general medical problems and physical therapy, including x-ray, radium and radioactive isotopes. There will be a continuous program of medical motion pictures. At the annual banquet Thursday evening Roderick Peattie, Ph.D., geographer and author and professor of geography, Ohio State University, Columbus, Ohio, will speak on "The Significance and Limitations of Geopolitics." The woman's auxiliary to the state medical society will meet on April 29 and 30. Other meetings will include the Ohio section of the American College of Chest Physicians, April 29, and a joint meeting of the Ohio Society of Anesthetists and the Ohio section of the American Society of Anesthetists, Inc., April 30.

OKLAHOMA

State Medical Meeting in Tulsa.—The Oklahoma State Medical Association will hold its fiftieth annual session at the Coliseum, Tulsa, April 22-24, under the presidency of Dr. Finis W. Ewing, Muskogee, and with the Tulsa County Medical Society acting as host. Included among the speakers will be the following:

Dr. Charles C. Dennis, Kansas City, Mo., Treatment of Pregnant Syphilitic Women and the Results of Treatment.
Dr. George R. Herrmann, Galveston, Texas, Functional Heart Disorders, Including the Soldier's Heart.
Dr. Morris Edward Davis, Chicago, The Endocrines in Obstetrics and Gynecology.
Dr. Algernon B. Reese, New York, Exophthalmos Associated with Thyroid Disease.
Dr. John C. Burch, Nashville, Tenn., Physiologic Approach to Gynecology.
Dr. Hugh L. Dwyer, Kansas City, Mo., Protection of Children Against Tuberculosis.
Dr. Robert L. Sanders, Memphis, Tenn., Carcinoma of the Colon.
Dr. Titus H. Harris, Galveston, Complications Following the Use of Dilantin.
Dr. Thomas Less Howard, Denver, Malignancy of the Bladder and Prostate with Reference to New Methods of Treatment.

The guest speakers will address both sectional and general sessions. A feature of this year's meeting will be a round table on sulfonamide therapy, in which all the guest speakers will participate.

PENNSYLVANIA

Personal.—Dr. Jeremiah Fletcher Lutz and Dr. Francis R. Wise of York have been appointed chairman and co-chairman, respectively, of Emergency Medical Service of York and York County.

Philadelphia

Immunization Program in Scarlet Fever Outbreak.—New clinics for the immunization of children against scarlet fever are being established throughout the city to cope with the disease which has been epidemic for several weeks, newspapers report. The city department of health has augmented its staff with the appointment of Dr. Harry Strieb as immunologist. Two other physicians and ten nurses have also been added to assist in the outbreak. Fifty-five new cases on March 21 brought the total for the year up to 2,036 and for the month of March to 878.

Dinner to Dr. Babcock.—Dr. William Wayne Babcock, since 1903 professor of surgery and clinical surgery, Temple University School of Medicine, was guest of honor at a dinner, March 26, given by citizens of Philadelphia, trustees of Temple University and the faculty and alumni of the medical school as an "expression of appreciation of Dr. Babcock's accomplishments and contributions to Temple University, Temple University Medical School, and the city of Philadelphia." Participating in the dinner were the Babcock Surgical Society, the Nurses Alumni Association and the entire student body of the medical school. Dr. Babcock has been affiliated with various institutions in Philadelphia since 1895.

Society News.—Dr. Francis L. Lederer, Chicago, discussed "Signs and Symptoms of Labyrinthitis—Their Surgical Implications" before the Philadelphia Laryngological Society March 10.——The Philadelphia Psychiatric Society was addressed, March 13, by Dr. Francis J. O'Brien, New York, on "Psychiatry in Education."——The Pathological Society of Philadelphia was addressed, February 12, by Drs. Baldwin H. E. W. Lucke and Hans G. Schlumberger on "Tumors in Cold Blooded Animals as Experimental Material for Studies on Neoplasia" and Dr. Dale Coman, "Human Neoplasma in Tissue Culture." All are of Philadelphia.——Dr. Louis Chargin, New York, among others, addressed the Philadelphia County Medical Society, February 11, on "Massive Dose Arsenotherapy in Syphilis."

TENNESSEE

New Professor of Pediatrics.—Dr. Walter Henry Maddux, now completing graduate studies at Yale University School of Medicine, New Haven, has been appointed professor of pediatrics at Meharry Medical College, Nashville, newspapers report. Dr. Maddux graduated at Rush Medical College, University of Chicago, in 1923.

State Medical Meeting in Memphis.—The Tennessee State Medical Association will hold its annual session at the Peabody Hotel, Memphis, April 14-16, under the presidency of Dr. Hiram A. Laws, Chattanooga. According to a preliminary program, the following guest speakers will participate:

Dr. Robert J. Reeves, Durham, N. C., Diagnosis and Treatment of Pulmonary Fungous Infection.
Dr. James S. McLester, Birmingham, Ala., Nutrition and Defense.
Dr. Carl M. Peterson, Chicago, Secretary, Council on Industrial Health, American Medical Association, Industrial Health and the Practicing Physician.
Dr. C. Anderson Aldrich, Winnetka, Ill., Ancient Processes in a Scientific Age—Feeding Aspect.
Dr. Fred Rankin, Lexington, Ky., President-Elect, American Medical Association (subject not announced).
Dr. Edgar H. Greene, Atlanta, Ga., The Procurement and Assignment Service.

Other groups meeting simultaneously with the state society are the Tennessee Academy of Ophthalmology and Otolaryngology and the Tennessee State Pediatric Society. Dr. William A. Garrott, Cleveland, will be guest speaker before the ophthalmologic group.

TEXAS

Medical Officer Prisoner of War.—Dr. Gustav Mason Kahn, Galveston, medical officer, U. S. Navy, stationed at Lake Island, is reported to be a prisoner of war, according to the Galveston *News*. Dr. Kahn graduated at the University of Texas Faculty of Medicine in 1932.

Changes of Health Personnel.—Dr. Paul L. Wermer, Gilmer, has been named health officer of Upshur County. Dr. Stephen W. Wilson, Gilmer, was recently chosen director of the new city health unit at Atlanta. Dr. Hatch W. Cummings is the new health officer of Hearne.——Dr. William B. Patterson, Brownfield, is the new director of the five county health unit serving Dawson, Hockley, Yoakum, Gaines and Terry counties, with headquarters in Brownfield.

GENERAL

Special Society Election.—Dr. Herman C. Pitts, Providence, R. I., was elected president of the American Society for the Control of Cancer at its annual meeting in New York in March. Other officers are Dr. Frank E. Adair, New York, vice president; Dr. Cornelius P. Rhoads, New York, secretary; James H. Ripley, New York, treasurer, and Clarence C. Little, Sc.D., Bar Harbor, Maine, managing director.

Meeting of Gastroscopic Club.—The recently organized American Gastroscopic Club will hold its first annual meeting in Atlantic City, June 7, with headquarters at the Hotel Claridge, when the following program will be presented:

Dr. Rudolf Schindler, Chicago, Introduction—On Chronic Epigastric Distress and on the Anatomic Foundation of Chronic Gastritis.
Dr. Crawford F. Barnett, Atlanta, Gastroscopic and Clinical Symptoms of Chronic Superficial-Atrophic Gastritis.
Dr. Edward B. Benedict, Boston, Gastroscopic and Clinical Symptoms of Chronic Hypertrophic Gastritis.
Dr. George B. Eusterman, Rochester, Minn., Clinical Significance of Chronic Gastritis.
Dr. Seymour J. Gray, Chicago, Epigastric Symptoms in Alcoholics With and Without Gastritis.
Dr. John Tilden Howard, Baltimore, Gastroscopic Findings in Cholecystectomized Patients.
Dr. John L. Kantor, colonel, M. C., U. S. Army, New York, Significance of Chronic Dyspepsia for the Army in World War I.
Dr. Rubin L. Gold, captain, M. C., U. S. Army, San Francisco, Gastroscopic Findings in Chronic Dyspepsia in the Army.
Dr. Frank B. McGlone, captain, M. C., U. S. Army, Denver, Incidence of Gastritis in Draftees, Soldiers and War Veterans.

Courses in Kenny Treatment of Paralysis.—A series of courses in the Kenny method of the treatment of early poliomyelitis will be conducted in Minneapolis under the supervision of Dr. Miland E. Knapp, director of the department of physical therapy, University of Minnesota Medical School, Minneapolis. The courses will be financed by the National Foundation for Infantile Paralysis. They have been arranged for physicians, registered physical therapy technicians, nurses with responsible positions in teaching institutions and nurses in key positions in large contagious disease hospitals. The classes will be repeated at various times in the next six to twelve months. The physicians' course is to be of one week's duration and limited to fifteen physicians although it will be repeated from time to time as the demand requires. The course for nurses from contagious disease hospitals is also of one week's duration. The course for registered physical therapy technicians, preferably technicians who have also had nurses' training, and for nurses in teaching institutions is of two to six months' duration. It is recommended that each institution contemplating the inclusion of the Kenny treatment in its program send a physician, a technician and a nurse for training. Inquiries concerning fees and dates of courses should be sent to the Director, Center for Continuation Study, University of Minnesota, Minneapolis.

Report of Rockefeller Foundation.—More than $9,000,000 was appropriated by the Rockefeller Foundation during 1941, mainly in the six major fields of public health, medical sciences, natural sciences, social sciences, humanities and program in China. The work in public health received the largest appropriation, $2,450,000. Medical sciences was second with $2,120,000. Of the money spent, 7.4 per cent was for work in the United States and 26 per cent for work in other countries. The largest appropriation made by the foundation in 1941 was $600,000 toward the endowment of the department of public health and preventive medicine of Cornell University Medical College, New York. During the year the Rockefeller Foundation supported four hundred and twelve fellowships for citizens of thirty-four different countries at a cost of $594,000; one hundred and eighty-one persons studied in countries other than their own. Fellowships for Latin Americans increased by 52 per cent over 1940; fellowships for Europeans, already at a low figure in 1940, decreased by 40 per cent. The fields represented in the two hundred and seventy-six fellowships administered directly by the foundation were public health one hundred and seven, public health nursing twenty-two, medical sciences fifty-three, natural sciences eighteen, social sciences twenty-six, humanities forty-one and the program in China nine, not including local fellowships for study in China. Two thousand three hundred and seventy-eight applications for financial aid were declined.

The foundation distributed 1,938,300 doses of yellow fever vaccine to the United States government and 1,972,380 doses to Africa. Including the total that went to India, Brazil and Singapore, the foundation gave a grand total of 4,260,680 doses of its own manufactured yellow fever vaccine. At the request of the army and navy, several million more doses will be distributed this year. Reflecting the action of the war on its activities, the foundation closed its Paris office in June 1940 and its Lisbon office in July 1941. There are now no foundation representatives on the continent of Europe, but an office is being maintained in London. Late in 1940 the Far Eastern office was moved from Shanghai to Manila. Peiping Union Medical College was closed by the Japanese authorities early in 1942 and the leading members of the staff were interned.

Emphasis is being placed on studies of malaria, typhus and yellow fever. In Trinidad, where malaria is the most urgent health problem, a study is being made in the civilian population. Another malaria project is on the Burma Road. A laboratory has been established directly on the road, and under war circumstances the project has encountered difficulties. A new technic was developed for measuring antibodies in the blood before and after vaccination for influenza, and eleven different types of vaccines have been prepared and tested in human volunteers. Special studies have been carried out in nutrition. One project was instituted in England in 1941 with the Ministry of Health and the Oxford Nutrition Survey.

The foundation gave $110,000 to the American Library Association to forestall the growth of serious gaps in the files of American scholarly journals in the libraries of war affected countries. A grant in aid was also given to expedite the flow of similar material from Europe to the United States.

The foundation appropriated $168,000 to the National Research Council to establish the Welch Fellowships in honor of the late Dr. William Henry Welch, Baltimore. This program will support a plan of senior fellowships in internal medicine, offering long training and adequate stipends to carefully selected men from 30 to 40 years of age. Stipends will not exceed $6,000 annually; in addition, allowances not to exceed $1,000 a year will be made for equipment and technical assistance. The first appointment will be for a period of three years, and subsequent appointment will be at the discretion of the council up to a total term of six years for each fellow. Fellowship holders will be free to move to the clinics best equipped to train them.

To develop a center in the United States for the study of tropical diseases, the foundation in 1941 gave $200,000 to the Tulane University of Louisiana School of Medicine, New Orleans.

LATIN AMERICA

New Public Health Journal.—The *Revista do Instituto Adolfo Lutz*, the official journal of the Central Laboratory of Public Health of São Paulo, has made its appearance. The first issue was dated July and the second December 1941. Dr. José P. Carvalho, Lima, is editor of the journal. The institute which the new publication serves bears the name of the late Adolfo Lutz, Rio de Janeiro, who for many years was the director of the Institute Bacteriológico of São Paulo, which was later transformed into the Central Laboratory of Public Health.

National Tuberculosis Committee.—A National Committee was recently organized in Argentina for the government campaign against tuberculosis. It will have headquarters in Buenos Aires and will direct and intensify the national crusade against tuberculosis. It will also manage the various problems related to the control of the disease in the country. Drs. Alejandro A. Raimondi and Rodolfo A. Vaccarezza, professors at the Faculty of Medicine of the University of Buenos Aires, were appointed president and secretary, respectively, of the National Committee against tuberculosis.

CORRECTIONS

St. Francis Hospital.—In the Hospital Number of THE JOURNAL, March 28, page 1088, the symbol ✦ indicating approval for residency, intended for St. Francis Hospital, Wichita, Kan., was mistakenly placed on St. Francis Hospital, Topeka, Kan.

Milk Borne Outbreak of Septic Sore Throat.—In a news item in THE JOURNAL, March 28, page 1151, reporting an outbreak of septic sore throat, the last sentence of the story should have read: Strains of hemolytic streptococci belonging to Lancefield serologic group A were isolated from the milk of the injured cow, from throat cultures from the milk handler and from a number of patients.

Barre City Hospital, Barre, Vermont.—In the Hospital Number of THE JOURNAL, March 28, page 1126, Barre, Vermont, and its hospital facilities were by typographical error placed under Utah. Barre, a city of 10,909 population in Washington County, has the Barre City Hospital, gen., N. P. Assn., 60 beds, average census of 50; 15 bassinets; 322 births; 2,043 admissions; approved by American College of Surgeons and State Board of Nurse Examiners. Also Washington County Tuberculosis Sanatorium, state owned; 47 beds; average census of 42; 64 admissions. Both fully registered and not [illegible]ated institutions.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Feb. 21, 1942.

Reduction in the Medical Staff of Hospitals

The minister of health has decided to reduce the medical staff of hospitals so as to provide more medical officers for the fighting forces. Whole time members of the staff are to be reduced by 15 per cent in London and by 10 per cent in the provinces. In the teaching hospitals the reduction will be smaller. In a circular the minister points out that this lowering of the numerical standard of staffing in hospitals calls for a maximum degree of cooperation between hospitals in time of pressure. He has therefore instructed his medical officers in each civil defense region to work out plans whereby hospitals heavily pressed by air attack or exceptional incidence of sickness in the locality can be given relief by other hospitals. Some arrangements of this kind already exist but the minister wants them to be general and on a clearly defined basis. He has in mind the allocation of specified officers in each hospital for temporary transfer in case of need. The period of transfer would usually be short, perhaps not more than a week. The arrangement should also include nurses.

American Hospital Built to Withstand Air Raids

The new Churchill Hospital is to be opened at Oxford. It will be administered by a group of American surgeons who arrived in England on the first day of the air raids on London. The hospital was built in 1941 and therefore is the first to be built with the horrors of modern warfare in mind. It is so designed that a bomb could do no great damage to the hospital as a whole. The wards are built round a courtyard, each ward having its own air raid shelter. Six hundred patients can be accommodated. The staff comprises twelve American doctors and fifty American and Canadian nurses. Its main function will be reconstruction, of which the two branches will be orthopedic and plastic. A medical service and other types of surgery will be provided as necessity arises. After the war it is intended, if possible, to keep the hospital as a permanent American hospital in relation with the Oxford Medical School. It is hoped that a similar British organization may be initiated in relation with a university in the United States.

War Injuries of the Eye

The indiscriminate bombing of cities has produced many cases of injury to the eye. At a meeting of the Section of Ophthalmology of the Royal Society of Medicine Mr. T. M. Tyrrell opened a discussion on the subject. He found that peace time methods of treatment did not apply well in war time. Some of the cases he had been unable to deal with at once and then learned the possibility of leaving a badly injured eye for twenty-four hours and getting a good result. He found in several cases that it was easier to deal with those which had to wait, and consequently he purposely began to leave patients unoperated on and found that results were apparently better. In the past he had been impressed by the degree of shock and restlessness of patients with perforating injuries and the need for a good seventh nerve block before thorough examination or operation. After the lapse of time the shock passes off and the patient is in a better condition to stand operation. This applies with even more force to air raid casualties in which there is more shock than in civil cases of eye injury. The dirt appears to have been blown deep into the skin and the conjunctival sacs are usually filled with a slimy mudpie of mucus and dirt. It is well to subject all these eyes to two or three hourly irrigations with an alkaline lotion before any operative intervention and at the time of operation to irrigate the conjunctival sac with 2 per cent silver nitrate long enough to produce a slight white film over the cornea. This forms a protective coat over particles which may be embedded in the cornea or conjunctiva and helps to prevent infection.

In nonpenetrating injuries all glass must be picked out of the conjunctival sac. Nearly all wounds of the lids become infected. Mr. Tyrrell cleans them with hydrogen peroxide and cuts out all obviously damaged tissue unlikely to survive. When there are multiple corneal foreign bodies he does not touch them. These patients are soon comfortable if the pupils are kept well dilated with oily atropine 0.5 per cent and later with "paroleine drops." The foreign bodies rapidly fall out, and any left can be picked out later.

Glass injuries are the chief bugbear of air raids. To prevent them, firemen and fire watchers should have a protective visor. It is very difficult to see glass even with a slit lamp and more difficult to extract. Fortunately in most cases glass works its way out even from the depths of the wound. Most glass injuries are so liberally peppered with small fragments that any attempt to roentgenograph them in looking for an intraocular fragment fails because of the cloud of other small pieces. In cases of a piece of glass lodged in the eye which shows no tendency to come out, the only indication for operation is interference with vision in an otherwise useful eye. Mr. Tyrrell has had about twenty severe glass injuries and has had to remove ten eyes too pulped to be saved. In the majority of the others, glass had perforated the cornea or sclera and fallen out again, and all that was necessary was a clean up, iridectomy and conjunctival flap.

The Effect on the Kidney of Limb Compression

In a previous letter a new syndrome—renal failure produced by prolonged compression of limbs by débris of buildings fallen during air raids—was reported. In a discussion at the Section of Surgery of the Royal Society of Medicine the president, Mr. E. Rock Carling, said that so far the war had furnished few new surgical problems, but an outstanding observation was the grave and often fatal damage to the kidneys after prolonged compression of the limbs. It was impossible to believe that a similar syndrome had not been associated with injuries in civil life, such as mine accidents. Little had appeared on the subject in English literature, but cases had been found in German literature.

Dr. J. McMichael said that the breakdown of autolytic products from dead or dying muscle seemed to be the main factor in damaging the kidneys. Some chemical substance was liberated and poisoned the tubule cells. There was also a tubule blockage, possibly from precipitation of myohemoglobin in the tubes. In crush injuries the kidney should be thought of from the first. The mistake had been made of waiting until about the third day, when renal damage was already severe, before treating the renal condition. It should be impressed on rescue parties that in persons pinned down by the limbs under wreckage the danger was renal failure. Therefore it was important to insure good diuresis, particularly about the time the injured were due to be released from pressure. Every effort should be made by means of abundant warm drinks to secure a good urinary flow. The diuresis would dilute the chemical substances within the renal tubules and perhaps prevent precipitation of myohemoglobin casts. Once the victim was released the circulation was likely to be flooded with toxic products, and therefore a more rational method of treatment was necessary. He did not think that any severe additional damage would be produced by the immediate application of a tourniquet. It should be applied to the limb above the site of crushing. When the patient reached the hospital the circulation through the limb should be restored only when good diuresis was established. Gradual release of the circulation might be attempted

by replacing the tourniquet by the sphygmomanometer cuff and slowly deflating. Possibly the limb vessels were already in spasm, so that these measures would achieve little. Another expedient was to pack the limb in ice so as to reduce the blood flow through the limb and diminish the rate of tissue breakdown, dependent on the action of enzymes, which acted best at about body temperature. The next point was alkalization of the blood or urine, because these patients tended to have a low alkali reserve. Administration of alkalis in quantities sufficient to make the urine alkaline was rational. Sodium bicarbonate and citrate should be given by mouth in quantities of 200 to 300 grains (13 to 20 Gm.) daily. The use of the sodium salt was important, because the high concentration of potassium in the blood of these patients might be one of the fatal biochemical factors. Good diuresis, of course, could not be maintained in the presence of circulatory collapse, and shock should be treated by serum or plasma transfusion. In our present state of knowledge these suggestions were only tentative.

The Bread Controversy

The adoption of white bread seems to have been a blunder. Reform is far from easy and the way is blocked by public taste. In a letter to the *Times*, Lord Bledisloe, minister of food, says that an unfortunate development of democracy is that the taste of the proletariat, however nocuous, becomes reflected in large scale industrial enterprise. No better illustration can be given than the craze for the white loaf because it is white, light and relatively durable, and the response to it by the modern steam roller mills eliminating from our bread the appetizing germ and the finer skins of the wheat grains with their minerals and vitamins.

The policy of the minister of food continues to be severely criticized in the *Times* and in the medical journals. Sir Wyndham Dunstan attacks his decision to fortify the white loaf with manufactured vitamin B_1 and calcium. The expense is $6,250,000, which is to be spent on the manufacture of the vitamin and $5,000,000 on distribution and incorporation in the daily bread supply. This reinforced bread is unnecessary, now that the standard wheatmeal loaf is available. Dr. Harris, Director of the Institute of Research for the Prevention of Disease, writes that calcium taken in excess affects the function of the kidneys and may easily prove a factor in hardening of the arteries. To put it at its lowest, the addition of calcium to bread would mean that forty million people would be used as experimental rabbits. That redoubtable controversialist Sir Ernest Gordon Graham-Little (dermatologist and member of Parliament) still maintains that the recommendations of the Medical Research Council for the new national loaf of 85 per cent extraction (against the usual 73) should not be carried out. Though there may be 85 per cent extraction, the flour is often still deprived of practically all the germ. Graham-Little says that "95 per cent of the flour controlled by the ministry is deprived of all its wheat germ and is chemically bleached, flouting the two principal recommendations of the Medical Research Council."

Nurseries for Children of War Workers

A large number of women are now engaged in war industries, and many of them are married and have young children. The London Women's Parliament has decided to send a deputation to the ministers of health and of education to emphasize the need for the provision of nurseries for war workers' children. Many mothers with recent factory experience are eager to return to work but have no one to take care of their young children. The solution is the rapid establishment of war time nurseries in large numbers and big extension of residential nurseries, preferably in reception areas.

Precautions Taken Against Typhus Fever

Typhus fever is ravaging a large part of Europe, including the eastern war front, Poland, the Baltic states, Germany, the Ukraine and Spain. It has also appeared in northern Africa. The British government has already taken precautions, which include arrangements for the supply of vaccine and the setting up of laboratories in the Middle East. On the home front the public health services have made preparations by which local authorities could carry out immediate large scale inoculation. At the ports, precautions have been taken to prevent the spread of the disease to this country.

PARIS

(From Our Regular Correspondent)

Feb. 21, 1942.

The Treatment of Epilepsy with Phenytoin

Prof. Charles Baudouin, dean of the faculty of medicine in Paris, read a paper before the Academy of Medicine, March 4, 1941, on the treatment of epilepsy by means of phenytoin sodium. During a trip to the United States in November 1937 he visited the medical services of Drs. Tracy J. Putnam and H. Houston Merritt in Boston, where he became acquainted with the new antiepileptic medicament. Drs. Merritt and Putnam in the Sept. 17, 1938 issue of THE JOURNAL published an article entitled "Sodium Diphenyl Hydantoinate in the Treatment of Convulsive Disorders." The product, introduced as dilantin in the United States, is known in Europe as epanutin. Professor Baudouin's experimentation with this product in 1940 was resumed by means of a French firm's product, using phenytoin and its sodium, calcium and magnesium salts. Professor Baudouin prefers the use of phenytoin itself because, compared to its derivative sodium, it is insoluble in water and unalterable in air. By administering from 0.3 to 0.5 Gm. daily as a cachet or as a compressed tablet of 0.1 Gm. to 13 patients he has not observed any nervous sequels, vertigo or digestive troubles. An erythrodermia was observed, but it quickly vanished after discontinuance of the drug. Of 13 epileptic patients 12 were resistant to phenobarbital or bromide treatment. In 5 grand mal cases three good results and one failure were observed. Among the 6 patients having petit mal attacks one excellent result, one good one, two improvements and two failures were observed. Professor Baudouin proposes not to omit phenobarbital entirely while treating epilepsy with phenytoin. Good results have been generally obtained by the combination of 0.1 to 0.15 Gm. of phenobarbital with 0.3 Gm. of phenytoin. Phenytoin is less hypnotic than phenobarbital.

Depressive Cardiovascular Action Caused by Phenytoin

At a meeting of the Academy of Medicine on July 8, 1941 Professor Baudouin reported an experiment on dogs with intravenous injections of phenytoin and its sodium derivative. The action of phenytoin and phenytoin sodium proved to be identical. In doses of 0.005 Gm. per kilogram a slightly depressive cardiovascular action can be observed. This inhibitory action is more evident at the auricle than at the ventricle (electrocardiogram). The arterial pressure is lowered and slackening of the rhythm until momentary cessation of heart action can be observed. Up to a dose of 0.02 Gm. these actions are temporary and reversible. Injection successively of the total dose of 0.04 to 0.06 Gm. may cause death. To this vagomimetic action, which is probably of central origin, a directly depressive muscular effect is still added. After the vagus has been cut, phenytoin always proves to be inhibitory. No changes are seen when sparteine is administered. Certain calcium salts, however, which affect the muscles directly as cardiotonics fight efficiently against the depressive action of phenytoin. Intravenous injections of this medicament to human beings are not feasible.

BUENOS AIRES

(From Our Regular Correspondent)

Feb. 25, 1942.

Tuberculosis

Dr. Luis Sayé of Buenos Aires recently read a paper in which he discussed tuberculosis, which continues to be a main cause of mortality in all countries of the world except five or six. The epidemic cycle of the disease from acute to attenuated forms lasts from thirty to more than one hundred years. The curve of mortality follows three different patterns for the three different phases of (1) tuberculization, (2) relative stabilization of the disease with slow diminution of the curves of mortality and (3) rapid diminution of the curves. The highest rate of mortality corresponds to patients of about 30 years of age. There are malignant clinical forms with a tendency to generalization of the disease. This epidemiologic phase predominates in Portugal, Greece, the northern, central and southern regions of Africa, Asia, Oceania, Venezuela, Brazil, Ecuador, Peru, Chile, Colombia and Bolivia. In the phase of relative stabilization of the disease the rate of mortality from tuberculosis varies between 10 and 16 per 10,000 people. Switzerland, Finland, Belgium, France, Spain, Italy, Argentina, Uruguay, Mexico and Cuba had tuberculosis in this phase in 1937-1938. In the phase of rapid diminution of the disease the rate of mortality from tuberculosis varies from 4 to 10 per 10,000 people. The frequency of this type of tuberculosis in infants and school children is rare. Complete infection is exhibited in patients between the ages of 40 and 50. The curve of mortality in men and women is similar. The age of greatest mortality for either men or women is between 40 and 80 years. England, Sweden, Norway, Denmark, the Netherlands, Germany, the United States, New Zealand and Australia had tuberculosis in this phase in 1937 and 1938. The results of crusades against tuberculosis show how much can be expected from work on prevention of the disease when it is carried on properly and in proportion with the needs. The good results obtained in preventing tuberculosis in the United States by controlling the diseases in cattle are recognized.

In countries in which well coordinated crusades on public hygiene are carried on, as is the case in Venezuela, the intensification of work for prevention of tuberculosis will cause a rapid lowering of the endemic curves of the disease.

In the United States, the Netherlands, Denmark, New Zealand and Australia the incidence of tuberculosis has greatly diminished in the last ten years. One wonders whether the disease will disappear from those countries within the coming twenty years. The insufficient results of antituberculosis crusades are shown by the frequency of tuberculosis in women between the ages of 16 and 35. Roentgenograms have been systematically taken of several thousand persons who lived in the poor districts of New York and Chicago in the course of antituberculosis crusades. It is found that tuberculosis is frequent among adolescents, Negroes and industrial workers who live in poor districts of large cities. The results of this research indicates the advisability of complementing the antituberculosis crusades (1) with the administration of antituberculosis vaccines to noninfected persons, (2) by carrying on periodic roentgen examinations of the thorax of persons exposed to tuberculosis and, if possible, of the thoraces of persons of the entire city and (3) by controlling tuberculosis in birds, hogs and other animals.

REHABILITATION OF TUBERCULOUS PATIENTS

Drs. F. Etcheverry Boneo and L. L. Silva recently published an article in the *Revista de Kinesiologia* on the importance of medical gymnastics in rehabilitating patients after clinical cure of pulmonary tuberculosis. The exercises begin after discontinuation of prolonged rest and progress as follows: The patient, sitting on a chair, performs mild movements of relaxation of the muscles of the neck, thorax and arms, with closed eyes. He moves first the fingers, then the hands, forearm, elbow, arm and head. He breathes according to the rhythm of certain sounds. The exercises are performed for five minutes every other day for one month. Then the exercises are repeated every other day but more energetically and for ten minutes. Creeping and other movements of the legs are also performed during the second and third series of exercises. The treatment is repeated once more. This time the patients stand while performing the exercises, which should be energetic and mild in alternation. The exercises should be modified for patients who have structural changes of the thorax from an operation. The duration of the second and third series of exercises depends on the variations of the pulse, the weight and clinical symptoms. The frequency of the pulse should not change, or it should diminish immediately after the exercises. The authors administered the treatment to 235 patients with apparent clinical cure. The treatment of 25 patients was discontinued early in its course with reappearance of clinical symptoms. In these cases the exercises were a test for apparent clinical cure and for continuation of treatment for their tuberculous lesions; 40 patients are still under treatment. The clinical cure obtained by the treatment in 170 cases continues up to now. The body weight increased in 157 cases in the group of patients with clinical cure and remained stationary in 13 cases.

Brief Items

A clinic and hospital with two well equipped departments for work on prevention and therapy of syphilis and leprosy was recently opened to the public in Paraguay. This center will be a branch of the National Department of Hygiene. Dr. Ricardo Ugarriza is the director.

Dr. José B. Gómez of Buenos Aires left Argentina recently for Chicago. He will have a scholarship for one year given to him by the Argentine National Cultural Committee. He will study the pathology of primary tuberculous infection and BCG vaccination under Drs. Henry Sweany and Rosenthal of Chicago.

Prof. José Arce presented his resignation from the chair of clinical surgery in the Faculty of Medical Sciences of Buenos Aires. Dr. Oscar Ivanissevich was appointed to succeed him.

Dr. Franz Keysser of Buenos Aires, previously of Germany, died Jan. 29, 1941. He was a well known worker on the field of electrosurgery, on which he wrote several important articles.

Marriages

ADDISON GORGAS BRENIZER JR., Charlotte, N. C., to Miss Meredith Ewing Marshall of Providence, R. I., January 1.

IRVING DAVID LONDON, West New York, N. J., to Miss Sarah Miller of Lineville, Ala., in Brooklyn, January 1.

JOHN WATKINS TRENIS, Washington, D. C., to Miss Nelle Frances Elliott at Birmingham, Ala., in January.

GEORGE M. COOPER to Miss Alison Suzanne Hughson, both of Buffalo, at Cochran Field, Ga., February 28.

SAMUEL WATSON PAGE JR., Greenwood, S. C., to Miss Edrie Ary Martin at Hillsboro, N. C., January 17.

WADLEY RAOUL GLENN to Miss Mary Frances Lewis, both of Atlanta, Ga., in Pensacola, Fla., recently.

GEORGE RITCHIE WALL, Siler City, N. C., to Miss Claudia Harris at Chevy Chase, Md., January 23.

JAMES NISSENBAUM, Appleton, Wis., to Miss Jean Hoffman of Ironwood, Mich., January 4.

GATES J. WAXELBAUM to Miss Sarah Frances Thames, both of Atlanta, Ga., recently.

MAX NORMAN to Miss Agnes Zuverink, both of Chicago, in Joliet, Ill., recently.

RALPH V. PLATOU to Miss Joanne Pierson, both of Minneapolis, January 23.

Deaths

Joseph Bolivar De Lee ● emeritus among obstetricians in the United States, died at his home in Chicago, April 2, of coronary thrombosis, aged 72. Dr. De Lee was born in Cold Springs, N. Y., Oct. 28, 1869. After preliminary education at the College of the City of New York, he received the degree of doctor of medicine from the Chicago Medical College, now Northwestern University Medical School, in 1891. Following an internship in the Cook County Hospital during 1891 and 1892 he became demonstrator in anatomy at his alma mater for one year, then lecturer in physiology in the dental school. He then studied in the universities of Vienna, Berlin and Paris, returning to Chicago in 1894 and becoming demonstrator in obstetrics and then a lecturer on obstetrics, assuming the chair of obstetrics in 1896 and the title of professor of obstetrics in 1897.

Almost immediately Dr. De Lee undertook the organization and building of a lying-in dispensary, which he founded in 1895. He began his obstetric work in a small maternity center in a building in the slums in an area in which all maternity care had been largely done by midwives. The hospital for maternity care was first opened in 1899. It began promptly to grow and to develop. In 1917 the first Chicago Lying-In Hospital and Dispensary was opened by Dr. De Lee in Chicago and in 1931 it became affiliated with the University of Chicago, and a new institution was built on the campus of the university. This institution was formally merged with the University in 1938. When the Chicago Lying-In Hospital became associated with the University of Chicago he became professor of obstetrics and gynecology and chairman of the department of obstetrics and gynecology in the University of Chicago in 1929, holding that position for three years and serving thereafter as consultant to the hospital. In 1938 the board of trustees of the University of Chicago named the main building of the Chicago Lying-In Hospital group the Joseph B. De Lee Hospital. It is reported that more than 28,000 children have been born in the present institution and that it operated without a single maternal death in a period extending over eighteen months.

Joseph Bolivar De Lee, M.D., 1869-1942

From the very beginning of his career Dr. De Lee devoted himself largely to the education and advancement of his specialty in the practice of medicine. In 1932 he founded the Chicago Maternity Center and until the time of his death served as consulting obstetrician. He was the author of a notable work, "The Principles and Practice of Obstetrics," first published in 1913 and now in its seventh edition. He was the author of "Obstetrics for Nurses," which is now in its twelfth edition and which was first published in 1904. He also published "Notes on Obstetrics" in 1904 and in the same year assumed editorship of the Year Book of Obstetrics. These books and monographs on obstetrics have been translated into most of the languages in the world and are used in medical schools in many nations.

Dr. De Lee was intimately associated with innumerable organizations in his specialty, including honorary fellowship in the Edinburgh Obstetrical Society. He was a fellow and vice president (1929) of the American Gynecological Society, a fellow of the American College of Surgeons. He was secretary of the Illinois State Medical Society in 1899, president of the Chicago Gynecological Society in 1908 and a councilor of the Chicago Medical Society in 1902. During 1933-1934 he was chairman of the Section on Obstetrics, Gynecology and Abdominal Surgery of the American Medical Association. In 1906 he was awarded the master of arts degree from Northwestern University.

On his 65th birthday Dr. De Lee was awarded the Jesse L. Rosenberger Medal, which was first won by C. L. Banting, co-discoverer of insulin.

Dr. De Lee recognized early the importance of the motion picture as a means of education. The new lying-in hospital was especially equipped for the making of motion pictures, particularly for educational purposes. Dr. De Lee was also the inventor of special devices used in obstetric and gynecologic practice. Practically all the proceeds derived from his practice and his publications Dr. De Lee devoted to the upbuilding of institutions with which he was associated and to the advancement of the teaching of obstetrics. In his career Dr. De Lee devoted himself not only to the institution which now bears his name but for many years was attending obstetrician to the Cook County, Wesley, Mercy and Provident hospitals. Throughout his life he campaigned for improvement in obstetrics as a science and for technics which would lower the death rates of mothers and babies. He lived to see many of the procedures for which he fought recognized as essential routine in his specialty.

Arthur Vincent Goss, North Pownal, Vt.; University of Vermont College of Medicine, Burlington, 1886; member of the American Psychiatric Association; first assistant physician at the Brattleboro Retreat, Brattleboro, Vt., from Oct. 15, 1923 to June 30, 1932; formerly on the staff of the Butler Hospital, Providence, R. I.; at one time assistant physician, assistant superintendent and superintendent of the Taunton (Mass.) State Hospital; aged 82; died, January 24, in Tunbridge of cerebral hemorrhage and hypertension.

John Abraham Pratt ● Minneapolis; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1894; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; formerly assistant professor of otology, rhinology and laryngology at the University of Minnesota Medical School; for many years on the staff of the Minneapolis General and Asbury hospitals; aged 73; died, February 21, of pneumonia and carcinoma of the prostate.

Edward Sutphen Pope ● New York; New York Homeopathic Medical College and Hospital, New York, 1903; Jefferson Medical College of Philadelphia, 1905; formerly adjunct professor of otology at the New York Polyclinic Medical School and Hospital; executive surgeon and secretary of the Midtown Hospital; on the staff of St. Vincent's Hospital, Montclair, N. J., and the New York Eye and Ear Infirmary; aged 61; died, January 23, of coronary disease.

Robert Hugh Arthur, Toronto, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., 1885; Licentiate of the Kings Queens College of Physicians, Dublin, Ireland, 1885; served during World War I; from 1914 to 1936 served on the Council of the Ontario College of Physicians and Surgeons and was president of that body in 1925 and 1926; past president of the Medical Council of Canada; at one time mayor of Sudbury; aged 80; died, Dec. 19, 1941.

Richard Joshua Brown ● Newark, N. J.; University and Bellevue Hospital Medical College, New York, 1910; member of the South Orange village board of trustees; consultant on the staff of the East Orange (N. J.) General Hospital, Babies' Hospital, Newark and the Essex County Hospital for Contagious Diseases, Belleville; secretary and obstetrician on the staff of the Presbyterian Hospital, where he died, February 4, of lobar pneumonia, aged 58.

George Joshua Gillam, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1910; F.R.C.S. of England, 1923; served during World War I; a member of the staff in the department of anatomy as a demonstrator from 1923 to 1925 and a junior demonstrator in surgery from 1930 until 1933 at the University of Toronto Faculty of Medicine; aged 54; on the staff of the Toronto Western Hospital, where he died, Dec. 20, 1941.

Julius Wolff ● New York; College of Physicians and Surgeons, medical department of Columbia College, New York, 1893; an Affiliate Fellow of the American Medical Association; ophthalmologist, Randall's Island Hospital, from 1899 to 1905; assistant ophthalmic surgeon to Bellevue Hospital from 1927 to 1932; served in various capacities on the staff of the Mount Sinai Hospital; aged 72; died, January 26, of acute coronary thrombosis.

Alexander Barclay Sr. ● Coeur d'Alene, Idaho; University of Minnesota College of Medicine and Surgery, Minneapolis, 1907; past president of the Idaho State Medical Association; for many years member of the state medical examining board; fellow of the American College of Surgeons; medical director of the Coeur d'Alene Hospital; aged 59; died, February 27, at Arlington, Calif., of cirrhosis of the liver.

Charles Herman De Lancey ● Passed Assistant Surgeon, Lieutenant, U. S. Navy, retired, Brooklyn; College of Physicians and Surgeons, medical department of Columbia College, New York, 1891; entered the navy June 23, 1900 and retired March 3, 1909 for incapacity resulting from an incident of service; aged 75; died, February 10, in the United States Naval Hospital of sarcoma of the left rib and lung.

Thomas Mitchell Burns ● Denver; Gross Medical College, Denver, 1893; professor of obstetrics emeritus at the University of Colorado School of Medicine; fellow of the American College of Surgeons; attending obstetrician, Mercy Hospital; consulting obstetrician, Denver General Hospital, Florence Crittenton Home, and the National Jewish Hospital; aged 74; died, February 17, of posterior mediastinitis.

Samuel R. Holroyd, Athens, W. Va.; College of Physicians and Surgeons, Baltimore, 1890; member and past president of the West Virginia State Medical Association; county health officer; formerly member of the state legislature; at one time superintendent of the Spencer (W. Va.) State Hospital; aged 73; died in January in the Mercer Memorial Hospital, Princeton, of diabetes mellitus.

Thomas Van Hunter ● Los Angeles; McGill University Faculty of Medicine, Montreal, Que., Canada, 1906; served with the Canadian Army during World War I; formerly on the staff of the Grace Hospital, Detroit, and the Highland Park (Mich.) Hospital; on the staff of the Presbyterian Hospital-Olmstead Memorial; aged 65; died, January 22, in an automobile accident.

Rollin Oliver Baker ● Montour Falls, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1906; served during World War I; at various times health officer, school physician and county coroner; on the staff of the Shepard Relief Hospital; aged 59; died, February 11, in the Strong Memorial Hospital, Rochester, of carcinomatosis.

Charles Green Rockwood Jennings, Elmira, N. Y.; University of Vermont College of Medicine, Burlington, 1884; College of Physicians and Surgeons, medical department of Columbia College, New York, 1885; formerly member of the board of education; aged 82; died, February 15, in the Arnot-Ogden Memorial Hospital of a fractured hip received in a fall.

William Austin Buchanan, Hammond, Ind.; University of Nashville (Tenn.) Medical Department, 1899; member of the Indiana State Medical Association; for many years secretary of the board of health of Hammond and formerly health officer; aged 71; on the staff of St. Margaret Hospital, where he died, February 11, of pyemia and diabetes mellitus.

Louis Francis O'Neill, Auburn, N. Y.; Albany Medical College, 1900; member of the Medical Society of the State of New York; past president of the Cayuga County Medical Society; formerly county coroner; on the staffs of the Mercy Hospital and the Auburn City Hospital; aged 66; died, January 5, of coronary occlusion and arteriosclerosis.

Irving Goumott Cameron ● Brooklyn; Long Island College Hospital, Brooklyn, 1904; fellow of the American College of Surgeons; surgeon, Brooklyn Eye and Ear Hospital; consulting ear, nose and throat surgeon, Kings County Hospital; consultant in otorhinolaryngology, Wyckoff Heights Hospital; aged 66; died, February 1, of heart disease.

Charles Austin Durkee, Abercrombie, N. D.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1908; member of the North Dakota State Medical Association; county health officer; aged 62; died, February 19, in a hospital at Fargo of acute coronary occlusion and diabetes mellitus.

Alphonse R. Bizot, Louisville, Ky.; University of Louisville Medical Department, 1901; member of the Kentucky State Medical Association; member of the county selective service examining board; on the staffs of the SS. Mary and Elizabeth Hospital and St. Joseph Infirmary; aged 67; died, February 13, of carcinoma of the pancreas.

James Bebout Bert, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1912; associate professor of obstetrics at his alma mater; served during World War I; aged 52; on the staff of St. Luke's and Children's Hospital and the Hahnemann Hospital, where he died, February 4, of pneumonia.

Charles Lorton Best ● Freeport, Ill.; Rush Medical College, Chicago, 1904; fellow of the American College of Surgeons; past president of the Stephenson County Medical Society; on the staffs of the Deaconess Hospital and St. Francis Hospital; aged 62; died, February 6, of coronary occlusion.

Eric Olonzo Giere ● Minneapolis; University of Minnesota College of Medicine and Surgery, Minneapolis, 1892; fellow of the American College of Surgeons; member of the state medical board from 1903 to 1906; surgeon, Fairview Hospital, where he died, February 12, of coronary thrombosis, aged 73.

Joseph Herbert Clyman ● Philadelphia; Medico-Chirurgical College of Philadelphia, 1910; chairman of the local draft board; on the staffs of St. Luke's and Children's Hospital, St. Joseph Hospital and and the Mount Sinai Hospital; aged 55; died, February 18, of coronary thrombosis.

Albertus Nyland, Grand Rapids, Mich.; Physio-Medical College of Indiana, Indianapolis, 1886; member of the Michigan State Medical Society; past president of the state board of registration in medicine; aged 86; died, January 29, in St. Mary's Hospital of cerebral hemorrhage.

Amos McKinnie Jones ● Anson, Texas; University of Texas School of Medicine, Galveston, 1906; served during World War I; aged 62; on the staff of St. Ann Hospital and of the Hendricks Memorial Hospital, Abilene, where he died, January 7, of coronary thrombosis.

John Joseph Breen, Lowell, Mass.; St. Louis University School of Medicine, 1928; member of the Massachusetts Medical Society; examining physician for the local draft board; aged 39; on the staff of St. John's Hospital, where he died, February 3, of a ruptured peptic ulcer.

Howard W. Arndt, Lore City, Ohio; Starling Medical College, Columbus, 1897; member of the Ohio State Medical Association; aged 69; past president of the Guernsey County Medical Society; died, February 6, in St. Francis Hospital, Cambridge, of acute endocarditis.

Carl Freeman Pierce ● Greensburg, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1907; past president of the Westmoreland County Medical Society; president of the staff of the Westmoreland Hospital; aged 60; died, January 22, of bronchogenic carcinoma.

Zannie Brantley ● Grandin, Fla.; Atlanta (Ga.) School of Medicine, 1913; past president of the Putnam County Medical Society; for many years member of the board of county commissioners; aged 63; died, February 6, in a hospital at Palatka of pneumonia.

Stanley Frederick Goldman, New York; University and Bellevue Hospital Medical College, New York, 1936; member of the Medical Society of the State of New York; on the staff of the Bronx Hospital; aged 33; died, February 24, of cerebral hemorrhage.

James Randall Cooper, Richmond, Ind.; University of Nebraska College of Medicine, Omaha, 1932; member of the Indiana State Medical Association; superintendent of the Smith-Esteb Memorial Hospital; aged 38; died, February 7, of pneumonia.

Thomas Jefferson Stough, Montgomery, Ala.; University of Tennessee Medical Department, Nashville, 1893; member of the Medical Association of the State of Alabama; formerly member of the state legislature; aged 74; died, January 30, of nephritis.

Jefferson Brockner Van Tine, New York; College of Physicians and Surgeons, medical department of Columbia College, New York, 1893; formerly on the staff of the Sloane Maternity Hospital; aged 70; died, January 22, of carcinoma of the liver.

James Byron Van Horn, Tucson, Ariz.; Eclectic Medical Institute, Cincinnati, 1905; member of the Arizona State Medical Association; formerly a first lieutenant in the medical reserve, U. S. Army; aged 59; died, January 28, of cerebral thrombosis.

Clinton Amos Hardesty ● Paragould, Ark.; St. Louis College of Physicians and Surgeons, 1910; past president of the Greene County Medical Society; on the staff of the Dickson Memorial Hospital; aged 65; died, January 10, of coronary occlusion.

Ralph Livingston Daniels, New Bern, N. C.; Medical College of Virginia, Richmond, 1912; member of the American Academy of Ophthalmology and Otolaryngology; served during World War I; aged 54; died, February 21, of cerebral hemorrhage.

Harry Cattell Fisler ● Easton, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1895; on the staff of the Easton Hospital; aged 68; died, February 20, in the Jefferson Hospital, Philadelphia, of acute coronary thrombosis.

Justus Corbly Garard ● Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905; aged 68; on the staff of St. Anne's Hospital, where he died, February 4, of carcinoma of the sigmoid.

Ellsworth E. Conover ● High Bridge, N. J.; University of Vermont College of Medicine, Burlington, 1885; on the staff of the Hackensack (N. J.) Hospital; aged 80; died, February 14, of shock and exhaustion following a prostatectomy.

Nathaniel Guido Clark ● Montgomery, Ala.; Birmingham Medical College, 1898; chief medical advisory officer of the department of correction and institutions of the state of Alabama; aged 69; died, February 11, of coronary occlusion.

George Richtmyer DeSilva, Catskill, N. Y.; University of the City of New York Medical Department, 1881; member of the Medical Society of the State of New York; aged 86; died, February 18, of acute dilatation of the heart.

Lemuel Baxley Russell, Hoopeston, Ill.; Rush Medical College, Chicago, 1894; past president of the Vermilion County Medical Society; member of the draft board during World War I; aged 73; died, January 22, of myocarditis.

Robert W. Cupp, Marmaduke, Ark.; Kansas City (Mo.) College of Medicine and Surgery, 1919; member of the Arkansas Medical Society; past president of the school board; aged 58; died, January 17, of carcinoma of the liver.

Gustavus G. Bock, Smithton, Ill.; St. Louis Medical College, 1882; member of the Illinois State Medical Society; for many years mayor of Smithton; aged 83; died, February 6, in Maryland Heights, Mo., of arteriosclerosis.

Oscar T. Bloomer, St. Joseph, Mo.; Central Medical College of St. Joseph, Mo., 1895; member of the Missouri State Medical Association; aged 80; died, February 19, of arteriosclerosis and cerebral hemorrhage.

Irwin Isadore Abrams, Toledo, Ohio; Detroit College of Medicine and Surgery, 1934; resident physician at the Veterans Administration Facility, Sunmount, N. Y.; aged 33; died, February 5, in Lake Placid, N. Y.

Frederick George Ulman, Enumclaw, Wash.; University of Oregon Medical School, Portland, 1905; member of the Washington State Medical Association; aged 71; died, January 29, of coronary occlusion.

Byron E. Burnell ● Flint, Mich.; Detroit College of Medicine, 1901; past president of the Genesee County Medical Society; aged 75; died, February 16, in the Hurley Hospital of cardiorenal vascular disease.

Charles Ross Bonzo, Ambridge, Pa.; Ohio Medical University, Columbus, 1903; member of the board of health of Ambridge; aged 61; died, February 8, of coronary thrombosis and diabetes mellitus.

Arthur O. Flowers, Clarksburg, W. Va.; College of Physicians and Surgeons, Baltimore, 1891; member of the West Virginia State Medical Association; aged 78; died, February 5, of acute peritonitis.

George Thomas Swail, Houston, Texas; M.B., University of Glasgow Medical Faculty, Scotland, in 1878 and M.D. in 1885; aged 93; died, January 11, in St. Joseph's Hospital of coronary occlusion.

Ira B. Oldham ● Muskogee, Okla.; Hospital College of Medicine, Louisville, Ky., 1892; aged 70; on the staff of the Oklahoma Baptist Hospital, where he died, January 14, of coronary occlusion.

John B. Argadine, Toledo, Ohio; Cincinnati College of Medicine and Surgery, 1893; aged 74; died, February 22, in St. Vincent's Hospital of uremia and a fracture of a femur received in a fall.

Nellie Veronica Donovan, New York; Cleveland Homeopathic Medical College, 1910; aged 54; died, February 8, in the Kings Park (N. Y.) State Hospital of arteriosclerotic heart disease.

Alice Idella Ross, Whittier, Iowa; State University of Iowa College of Homeopathic Medicine, Iowa City, 1894; aged 71; died, January 15, of carcinoma of the mammary gland.

Francis Adelbert Bragg, Foxboro, Mass.; Harvard Medical School, Boston, 1894; member of the Massachusetts Medical Society; aged 76; died, February 6, of cerebral hemorrhage.

Ernest H. Harris, Coy, Ark.; College of Physicians and Surgeons, Little Rock, 1911; member of the Arkansas Medical Society; aged 61; died, January 15, of coronary occlusion.

Charles M. Iddings, Brookeville, Md.; University of Maryland School of Medicine, Baltimore, 1888; aged 81; died in February of cerebral hemorrhage and arteriosclerosis.

Mary E. Troyer Williamson, Ramona, Okla.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1883; aged 88; died, January 15, of injuries received in a fall.

John H. Ellington, San Augustine, Texas (licensed in Texas under the Act of 1907); member of the State Medical Association of Texas; aged 63; died, February 2.

Harvey Llewellyn Clarke Sr., Fairbury, Neb.; University of Michigan Homeopathic Medical School, Ann Arbor, 1882; aged 83; died, February 3, of coronary thrombosis.

Rembert Ernest Broadway, Summerton, S. C.; Medical College of the State of South Carolina, Charleston, 1911; aged 57; died, February 18, of coronary thrombosis.

General Grant Bragg, Huntsville, Mo.; Missouri Medical College, St. Louis, 1889; served during World War I; aged 75; died, February 9, of uremia and chronic nephritis.

William F. Williamson, Richmond, Va.; University College of Medicine, Richmond, 1905; served during World War I; aged 62; died, January 13, of heart disease.

Walter Brown, Hamilton, Ohio; Medical College of Ohio, Cincinnati, 1875; aged 91; died, February 13, in the Fort Hamilton Hospital of cerebral hemorrhage.

John Floyd A. Ketcham, Great Barrington, Mass.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1935; aged 39; died, January 30, of heart disease.

John S. Patterson, Staunton, Ill.; St. Louis College of Physicians and Surgeons, 1904; aged 75; died, January 13, in a hospital at Alton of arteriosclerosis.

William P. Collins, Racine, Wis.; Rush Medical College, Chicago, 1888; aged 82; died, February 7, in Lakeland, Fla., of bronchopneumonia and heart disease.

Martin David Goldenberg, Milwaukee; Marquette University School of Medicine, Milwaukee, 1929; aged 44; died, February 19, of coronary occlusion.

John T. Blanks, Dermott, Ark.; Medical Department of Tulane University of Louisiana, New Orleans, 1888; aged 80; died, February 18, of endocarditis.

Conrad Fisher Sayre, Charleston, W. Va.; College of Physicians and Surgeons, Baltimore, 1910; county coroner; aged 52; died, January 11.

Owen John Cameron, Antigonish, N. S., Canada; Harvard Medical School, Boston, 1918; aged 46; died, January 9.

DIED IN MILITARY SERVICE

Gustavus De Lana Funk ● El Reno, Okla.; University of Oklahoma School of Medicine, Oklahoma City, 1933; was called to active duty as a first lieutenant in the medical reserve, U. S. Army, Oct. 11, 1940, and was promoted to captain in December 1941; was assigned to the district recruiting office at Lubbock, Texas; aged 36; died, February 26, of heart disease.

Correspondence

PERIPHERAL VASCULAR DISEASE CLINICS

To the Editor:—The committee appointed by the American Heart Association to establish standards for peripheral vascular disease clinics desires to have a complete list of such clinics throughout the United States. Kindly communicate as soon as possible after seeing this notice with the chairman of this committee, giving the following data:

1. Name of hospital?
2. Name of chief or chiefs of clinic?
3. Under medical or surgical service?
4. Is there an associated hospital service?

A. WILBUR DURYEE, M.D., Chairman,
140 East Fifty-Fourth Street,
New York City.

PROPYLENE GLYCOL A MENSTRUUM FOR SODIUM SULFATHIAZOLE

To the Editor:—In Queries and Notes in a recent issue of THE JOURNAL (February 14, p. 567) one reads the reply to the disturbing question concerning the safe concentration of sodium sulfathiazole when used in medicating the nasal mucosa. As was so well stated, sodium sulfathiazole is not free of undesirable reactions because of the irritating properties associated with its alkalinity. Aqueous solutions of sodium sulfathiazole vary in p_H from 10 to 11 and may become yellow on standing, especially when unprotected from daylight. To obviate the strong alkalinity, irritating properties and deterioration of such solutions, we have dissolved various sulfonamides in propylene glycol (*Modern Hospital* **57**:106 [July] 1941; *J. Indiana M. A.*, to be published in April). The most useful of these propylene glycol preparations have been a 3 per cent solution of sulfathiazole, a 3 per cent solution of sulfapyridine and a 10 per cent solution of sulfanilamide. The p_H of the sulfathiazole solution varies between 6 and 7 when diluted 1:9 with water, and the solution of sulfanilamide possesses a p_H of 5.3 when diluted 1:7 with water, thus affording solutions whose p_H more nearly conforms to normal nasal secretions. These secretions were found (Fabricant, N. D.: Significance of the p_H of Nasal Secretions, *Tr. Am. Acad. Ophth.*, May-June, 1941, p. 197) to be acid in reaction, p_H values varying from 5.5 to 6.5, and to become alkaline when infected. The 3 per cent solution of sulfathiazole can be diluted with 0.9 per cent saline solution or water prior to use, but the undiluted 3 per cent solution atomizes very well at 22 C. or more, is nonirritating to the mucosa of the nasal passages, oral pharynx, larynx, trachea or bronchi and affords definite relief in many cases of acute and chronic infections of the upper respiratory tract. Any type of organism susceptible to sulfonamide therapy should, if harbored in the upper respiratory tract, likewise be favorably affected by sulfonamides in propylene glycol. Detailed reports of various types of cases studied with Drs. G. B. Myers, R. H. Huff, J. M. Robb and R. W. Blackford at the Detroit Receiving Hospital will be published later, but results to date indicate that this preparation of sulfathiazole warrants extensive trial in infections of the upper respiratory tract. The patient is instructed to inhale while the solution is sprayed several times into the nose or throat at thirty or sixty minute intervals for four or five hours or more, and this procedure may be supported in cases of severe infections by proper oral doses of sulfathiazole.

If stored in amber colored bottles at 22 C. or more these self-sterilizing, nonirritating solutions of concentrated sulfathiazole remain stable, colorless and potent. Some of our solutions are now more than 6 months old and no apparent alteration in their consistency, appearance or potency is evident. Our toxicity experiments on rabbits receiving these solutions intraperitoneally and intravenously and the investigations of the Stanford group (Hanzlik, D. J.; Neuman, H. W.; Van Winkle, W.; Lehman, A. J., and Kennedy, N. K.: Toxicity, Fate and Excretion of Propylene Glycol and Some Other Glycols, *J. Pharmacol. & Exper. Therap.* **67**:101 [Sept.] 1939) reveal that, in contradistinction to diethylene glycol (Geiling, E. K.; Coon, J. M., and Schoeffel, E. W.: Preliminary Report of Toxicity Studies [of Diethylene Glycol] on Rats, Rabbits and Dogs, THE JOURNAL, Nov. 6, 1937, p. 1532; Haag, H. B., and Ambrose, A. M.: Studies on the Physiologic Effect of Diethylene Glycol, *J. Pharmacol. & Exper. Therap.* **59**:93 [Jan.] 1937), propylene glycol can be well tolerated in large amounts without unfavorable results. The relative safety of propylene glycol is also assured by its use as a vehicle for certain proprietary vitamin D preparations and in sobisminol mass, and experience to date warrants its application in any concentration to any open lesion of the skin or mucosa, with the probable exception of the conjunctiva. This glycol, as well as ethylene glycol and trimethylene glycol, is an effective aerial germicide (Robertson, O. H.; Bigg, Edward; Miller, B. F., and Baker, Zelma: Sterilization of Air by Certain Glycols Employed as Aerosols, *Science* **93**:213 [Feb. 28] 1941). Propylene glycol may be fortified, however, by addition of 10 per cent sulfanilamide, 3 per cent sufathiazole or sulfapyridine. Unfortunately, sulfadiazine is only approximately 0.3 per cent soluble in propylene glycol. We also find that equal volumes of the three propylene glycol solutions of sulfanilamide, sulfathiazole and sulfapyridine may be mixed, since they are compatible and thus afford greater probability of efficiency in the presence of mixed infections.

FREDRICK F. YONKMAN, M.D.
BRADFORD N. CRAVER, PH.D.
ARNOLD J. LEHMAN, M.D.
HAROLD F. CHASE, M.D.
Detroit.

ESTROGENIC TREATMENT OF GONORRHEAL VULVOVAGINITIS

To the Editor:—A few years ago I corresponded with reference to the relative worth of the estrogenic treatment of gonorrheal vulvovaginitis. In view of the fact that the originator of the estrogenic treatment, Dr. R. M. Lewis, has himself repudiated this treatment and in view of current literature corroborating his present attitude, I feel that it is worth while to bring this matter to your attention again. I quote from an article by him in *Venereal Disease Information* (**22**:352 [Oct.] 1941): "Unfortunately, treatment with estrogens is still employed. As I shall mention later, it has no curative value and is not to be compared with the brilliant results now obtainable with sulfathiazole. . . . It is evident that the estrogenic treatment was but a palliative procedure which carried patients along until spontaneous recovery occurred."

However, there are many interesting and valuable facts that have been brought out by this treatment. One is the fact that newborn females do not easily acquire gonorrheal vulvovaginitis, the probable reason being that they carry, for a short time, estrogens from their mothers (cause of hyperplasia of breasts and genitalia of newborn females). These estrogens apparently do not allow the gonococcus to gain a foothold in the newborn female genitalia. Nevertheless, in 1934 I reported 3 cases which occurred in premature females and recommended "that all newborn females have prophylaxis of the vulva routinely, along with the eyes." Since then this has become the routine practice in one of the largest hospitals of this city. Lewis now recommends "flushing the vagina and vulva of the newborn of infected mothers with silver solutions."

BERNARD NOTES, M.D., Washington, D. C.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE
CHICAGO, Feb. 15-16, 1943. Sec., Council on Medical Education and Hospitals, Dr. H. G. Weiskotten, 535 North Dearborn Street, Chicago.

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES
Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, April 4, page 1241.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, June 16-18. Acting Sec., Dr. B. F. Austin, 519 Dexter Ave., Montgomery.

ARKANSAS: * *Medical.* Little Rock, June 4-5. Sec., Dr. D. L. Owens, Harrison. *Eclectic.* Little Rock, June 4-5. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Written.* San Francisco, June 29-July 2. *Oral examination* (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California), Los Angeles, May 20. Sec., Dr. Charles B. Pinkham, 1020 N St., Sacramento.

DELAWARE: Dover, July 14-16. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

FLORIDA: * Jacksonville, June 22-23. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, June. Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

HAWAII: Honolulu, July 13-16. Sec., Dr. James A. Morgan, 55 Young Bldg., Honolulu.

ILLINOIS: Chicago, June 23-25. Superintendent of Registration, Mr. Philip M. Harman, Department of Registration and Education, Springfield.

INDIANA: Indianapolis, June 16-18. Sec., Board of Registration and Examination, Dr. J. W. Bowers, 301 State House, Indianapolis.

IOWA: * Iowa City, May 11-13. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

KANSAS: Kansas City, June 2-3. Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. Seventh St., Kansas City.

KENTUCKY: Louisville, May 27-29. Sec., State Board of Health, Dr. A. T. McCormack, 620 S. Third St., Louisville.

MARYLAND: *Medical.* Baltimore, June 9-12. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Homeopathic.* Baltimore, June 16-17. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MICHIGAN: * Ann Arbor and Detroit, June 10-12. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-4 Hollister Bldg., Lansing.

MINNESOTA: * Minneapolis, April 21-23. Sec., Dr. Julian F. Du Bois, 230 Lowry Medical Arts Bldg., St. Paul.

MISSISSIPPI: Jackson, June. Assistant Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MISSOURI: St. Louis, June 4-6. Sec., Board of Health, Dr. James Stewart, State Capitol Bldg., Jefferson City.

NEVADA: *Written.* May 4. Reciprocity with oral examination, May 4. Applications must be on file not later than April 20. Sec., Dr. Frederick M. Anderson, 215 N. Carson St., Carson City.

NEW JERSEY: Trenton, June 16-17. Sec., Dr. Earl S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: * Santa Fe, April 13-14. Sec., Dr. Le Grand Ward 135 Sena Plaza, Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, June 22-25. Chief, Bureau of Professional Examinations, Mr. Herbert J. Hamilton, 313 Education Bldg., Albany.

NORTH CAROLINA: Raleigh, June 15. Sec., Dr. W. D. James, Hamlet.

NORTH DAKOTA: Grand Forks, July 7-10. Sec., Dr. G. M. Williamson, 414 S. Third St., Grand Forks.

OHIO: *Written.* Columbus, June. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: * Oklahoma City, June 3-4. Sec., Dr. James D. Osborn Jr., Frederick.

OREGON: * Portland, July 22-24, Exec. Sec., Miss Lorienne M. Conlee, 608 Failing Bldg., Portland.

PENNSYLVANIA: Philadelphia and Pittsburgh, July. Act. Sec., Bureau of Professional Licensing, Mrs. Marguerite G. Steiner, 358 Education Bldg., Harrisburg.

SOUTH CAROLINA: Columbia: June 22-24. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

SOUTH DAKOTA: * Pierre, July 21-22. Dir., Medical Licensure, Dr. J. F. D. Cook, State Board of Health, Pierre.

UTAH: Salt Lake City, June 29-30. Assistant Dir., Department of Registration, Mr. G. V. Billings, 324 State Capitol Bldg., Salt Lake City.

VERMONT: Burlington, June 16-18. Sec., Board of Medical Registration, Dr. F. J. Lawliss, Richford.

VIRGINIA: Richmond, June 17-20. Sec., Dr. J. W. Preston, 30½ Franklin Rd., Roanoke.

WISCONSIN: * Milwaukee, June 30-July 3. Sec., Dr. H. W. Shutter, 425 E. Wisconsin Ave., Milwaukee.

WYOMING: Cheyenne, June 1-2. Sec., Dr. M. C. Keith, Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

CONNECTICUT: June 13. Address State Board of Healing Arts, 1945 Yale Station, New Haven.

DISTRICT OF COLUMBIA: Washington, April 20-21. Sec., Commission on Licensure, Dr. George C. Ruhland, 6150 E. Municipal Bldg., Washington.

FLORIDA: Gainesville, June 8. Sec., Professor J. F. Conn, John B. Stetson University, De Land.

IOWA: Des Moines, April 14. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

NEBRASKA: Omaha, May 5-6. Dir., Bureau of Examining Boards, Mrs. Jeannette Crawford, 1009 State Capitol Bldg., Lincoln.

NEW MEXICO: Springer, June 12. Sec., Miss Pia Joerger, State Capitol, Santa Fe.

OKLAHOMA: Oklahoma City, May 15. Sec., Dr. Oscar C. Newman, Shattuck.

OREGON: Corvallis, July 11. Application must be on file not later than June 24. Sec., Mr. Charles D. Byrne, University of Oregon, Eugene.

RHODE ISLAND: Providence, May 20. Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: Vermillion, June 5-6. Sec., Dr. G. M. Evans, Yankton.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Liability for Results of Treatment of Infantile Paralysis.—In November 1934 the plaintiff wife lost the use of the upper part of her body, her arms and her hands as the result of an attack of infantile paralysis and was immediately placed under the supervision and direction of an orthopedic surgeon. While under his care she improved to a point at which she could rotate her arms and could perform simple tasks with her hands, such as cutting out pictures, untying knots in shoelaces, cleaning out grapefruit and peeling potatoes. There was very little improvement in the patient's ability to use the muscles of her upper arms and shoulders. Some time in July 1936 the patient became dissatisfied with her treatment and progress and consulted the defendant physician, an orthopedic surgeon with many years' experience in the treatment of patients afflicted with infantile paralysis. He agreed to treat her on the condition that she follow his instructions. On July 7, 1936 the defendant placed the patient in a cast which covered her body from her neck to her hips and extended down her arms to the first joint of the fingers and thumbs. The cast remained in place until November 11, when it was removed on the patient's complaint that it was becoming painful. When the cast was removed, the patient's wrists and fingers were found to be practically rigid, and many massage treatments and even manipulations under an anesthetic were necessary before any flexibility returned. There seemed to be a slight improvement in the shoulder muscles, however. In a subsequent suit by the patient and her husband against the defendant for damages, the trial court entered judgment for the plaintiffs, and the defendant appealed to the Supreme Court of Washington.

The only expert medical testimony in the case was supplied by the defendant and Dr. LeCocq, a witness called in his behalf. Dr. LeCocq stated that it was the approved and accepted practice of orthopedic physicians in that community to place an infantile paralysis patient in a cast in order to rest the afflicted muscles and that very often the physician would not visit the patient from the time the cast was put on until it was removed, the patient being advised to report if anything seemed wrong. Both Dr. LeCocq and the defendant stated that some stiffness in the immobilized joints was to be expected, that such stiffness would occur within three to eight weeks after the cast was put on, and that it would not be aggravated or increased by permitting the cast to remain in place longer than eight weeks, because once the stiffness had set in it became fixed and would not change. The defendant further testified that when the cast was applied he told the patient to notify him any time anything seemed wrong. After about eight weeks he called the patient's husband and told him to buy a brace to be applied as soon as the cast was removed. Because of some financial trouble with the brace maker, however, the husband did not obtain the brace until November 10 or 11. The cast was then removed and the brace applied. There was also some evidence on behalf of the defendant that the patient did not follow all of the recommended treatment. The plaintiffs did not offer any expert testimony indicating that the patient's condition was in any way the result of the defendant's treatment.

The plaintiffs contended that the defendant's negligence consisted in leaving the patient in the cast for more than the customary six to eight weeks without making periodic investigations to ascertain her condition. They also contended that no expert testimony was needed to prove the defendant's unskilled and negligent treatment. The Supreme Court admitted that in malpractice cases it is not always necessary to prove negligence by direct and positive evidence but said that the only exceptions were cases in which the negligent act was readily apparent, as the leaving of a sponge in a person's body after an operation. The most the plaintiffs' evidence showed, said the court, was that, when the cast was put on, the patient could use her wrists and fingers and when it was taken off she could not; in other words, that a bad result followed the attempt of the defendant to restore the use of the patient's shoulder muscles. A physician

is not a guarantor, and the mere fact that a bad result follows a particular treatment does not in itself establish negligence. Furthermore, the court was of the opinion that if the patient's husband had furnished the requested brace sooner the cast would have been removed sooner.

On the basis of all the evidence, the court thought, there was no competent showing that the patient's injuries in any way resulted from the fact that the cast was left on longer than the ordinary six to eight weeks or that if the defendant had made an investigation at the end of six or eight weeks he would have found a different condition from that which existed at the time the cast was ultimately removed. The court also held that the question of the defendant's negligence in this case could properly be determined only by medical experts and that, since the plaintiffs furnished none, to allow the judgment to stand would be to say that the jury could speculate on the question of the defendant's negligence. The judgment for the plaintiffs was accordingly reversed.—*Crouch v. Wyckoff, 107 P. (2d) 339 (Wash., 1940).*

Assault and Battery: Sufficiency of Evidence to Show Consent to Operation.—The plaintiff sustained injuries to his right chest and neck, above and below the clavicle, and was eventually taken to a hospital and placed under the care of the defendant physician. A roentgenogram disclosed a fracture of the transverse process of the sixth cervical vertebra on the right side. Electrical treatments were administered for a considerable period but without success; the plaintiff continued to suffer excessive pain in his shoulder whenever he moved his arm. The defendant therefore decided that an operation was necessary. Neither the exact nature of the operation nor its result was disclosed in the report of this case, but some time thereafter the plaintiff sued the defendant physician for damages. The jury disagreed, the defendant's motion for judgment was denied, and the defendant appealed to the Supreme Court of Pennsylvania.

The plaintiff contended that the defendant had performed the operation without his consent and was therefore guilty of an assault and battery. The evidence showed that after electrical treatment gave no relief the defendant advised the plaintiff that an operation would be necessary. Various conversations were held between the plaintiff and the defendant concerning this operation, and at no time did the plaintiff interpose any objection to it. In fact the plaintiff testified "Dr. Berg come to my room and tell me, he say, 'Mr. Dicenzo, we' going to operate you half past eight tomorrow morning.' I say, 'O. K., doctor. Where are you going to operate me?'" Apparently the plaintiff's only worry was as to the location of the incision. He was aware, however, that surgical relief was necessary and that the region of the neck would be involved. The evidence showed that the incision was, in fact, "made over the neck." The Supreme Court observed that when a patient is in full possession of his faculties and able to consult about his condition and when no emergency exists making a conference with the physician impracticable, the patient's consent is a prerequisite to a surgical operation by his physician. An operation without the consent of the patient under such circumstances constitutes a technical assault. Applying that rule to the facts of this case, however, the Supreme Court was of the opinion that the defendant was fully justified in believing that the plaintiff had assented to the performance of the operation. The order overruling the defendant's motion for judgment was therefore reversed and judgment was entered for the defendant.—*Dicenzo v. Berg, 16 A. (2d) 15 (Pa., 1940).*

Malpractice: Pregnancy Diagnosed as Tumor; Right of Specialist to Rely on Diagnosis by Family Physician.—The plaintiff, believing that she was pregnant, consulted her family physician, who examined her both externally and internally and diagnosed her condition as a tumor rather than a pregnancy. He then took the plaintiff to a roentgenologist for treatment. The only examination which the roentgenologist made was to feel the plaintiff's abdomen and call attention to its enlargement. Relying thus on the diagnosis of the family physician, he administered a roentgen treatment. The decision abstracted does not indicate what injury the patient suffered, but she sued the two physicians and the case in the trial court was nonsuited as to the roentgenologist and dismissed for lack of jurisdiction as to the family physician because he resided in another county. The plaintiff appealed to the court of appeals of Georgia, division No. 1.

The plaintiff contended that the malpractice of the defendants consisted in their failure and refusal to make a roentgen examination to determine whether or not she was in fact pregnant. The court of appeals said that a patient was entitled to receive as thorough and careful an examination as the circumstances would permit. The evidence failed to show, however, said the court, that the family physician had an x-ray apparatus available at the time he made the diagnosis, that the method of examination used by him was not the customary one under the circumstances or that the child was fully enough developed to have been discovered by a roentgen examination. The plaintiff then insisted that the roentgenologist, who did have x-ray equipment available, should have made such an examination. The court of appeals held, however, that a specialist to whom a family physician refers a patient for treatment has a right to rely on the diagnosis made by the family physician unless there are contrary indications. The slight examination made by the roentgenologist in this case, continued the court, was sufficient to lead him to believe that the diagnosis of the family physician had been correct. He was therefore not required to examine further. In conclusion, the court also pointed out, this was a case which concerned highly specialized expert knowledge with which laymen were unfamiliar and that, "where want of skill and care is not thus shown by expert evidence applied to the facts, there is no evidence of it proper to be submitted to the jury. . . . Laymen, even jurors and courts, are not permitted to say what is the proper method of diagnosing a case for discovering the nature of an ailment." A court and jury must have a standard measure, which they can use in measuring the acts of a physician to determine whether or not he exercised a reasonable degree of care and skill. That standard has to be furnished by testimony of physicians, for it is a medical question. The plaintiff's evidence was entirely silent as to the standard method of diagnosing and treating a case of this nature. Therefore the action of the trial court nonsuiting one defendant and dismissing the other was proper and the judgment for the defendants was affirmed.—*Pilgrim v. Landham et al., 11 S. E. (2d) 420 (Ga., 1940).*

Birth Control: Materiality of Intent of Vendor of Contraceptives.—A Massachusetts law provides that "whoever sells, lends, gives away, exhibits, or offers to sell, lend or give away an instrument or other article *intended to be used* for self-abuse, or any drug, medicine, instrument or article whatever *for* the prevention of conception or for causing unlawful abortion . . ." is guilty of a felony. The defendant, a registered pharmacist, sold some condoms to a police officer who purchased them for the purpose of holding them as evidence. It was admitted by both the defendant and the commonwealth, in a subsequent prosecution of the defendant for violating the foregoing law, that the condom is medically recognized and regarded as a venereal disease preventive and that it is sometimes used to prevent conception as well. The commonwealth produced no evidence indicating that the defendant intended the object of the sale to be used for any unlawful purpose. On this evidence, the defendant was found guilty of the charge against him and appealed to the Supreme Judicial Court of Massachusetts.

The commonwealth contended that since the articles sold by the defendant were susceptible of use for an unlawful purpose, and often were used for that purpose, the mere fact that they were equally susceptible of a lawful use should be disregarded and the sale should be condemned as the sale of articles "for" the prevention of conception. The defendant, on the other hand, contended that the word "for," as used in the law, referred to the intent of the vendor. He argued that the sale of articles susceptible of both a lawful and an unlawful use could not be declared unlawful without actual proof that the vendor knew, at the time he made the sale, that they were going to be used for the unlawful purpose. He also suggested that the commonwealth's construction would include within the prohibition of the statute the sale of many familiar and almost necessary antiseptic, hygienic and sterilizing articles, since such articles were

likewise susceptible of being used to prevent conception. The Supreme Judicial Court admitted that the difficulty in this case resulted from the fact that the articles sold by the defendant were not used exclusively either for the prevention of conception or for the prevention of disease. The declared public policy of Massachusetts, the court said, is offended by the sale of articles intended to prevent conception; it is also offended by the unchecked spreading of venereal disease, even among those who indulge in illicit sexual intercourse. The insertion of the words "drug" and "medicine" in the law, said the court, made necessary some change in grammatical construction, and precluded, after the words "for self-abuse," the simple adding of the words "or for the prevention of conception or for causing unlawful abortion," and thus making the phrase "intended to be used" patently applicable to all three purposes. To the court there was reason to believe that the words "intended to be used" were in effect to be understood before the word "for" in the two instances in which they are omitted in the law. They may have been omitted, continued the court, either because to repeat them would have made the wording cumbrous or because the word "for" by itself conveys the same idea of intent or purpose.

The court thought that an indication of legislative intent was shown by the fact that in the law the prohibition of the sale, etc., of an "instrument or article . . . for the prevention of conception" is followed immediately by the words "or for causing unlawful abortion." The same instrument or article that would cause a lawful abortion would doubtless cause an unlawful one, the court pointed out, and if a dealer in surgical instruments should be accused of selling to a surgeon an instrument "for" causing unlawful abortion, an inquiry would necessarily be opened as to the purpose for which the particular instrument was sold and intended to be used. It would be strange to hold, the court concluded, that intent and purpose are material in construing the word "for" in the phrase "for causing unlawful abortion," and immaterial in construing the same word in the phrase "for the prevention of conception." The Supreme Judicial Court therefore agreed with the construction contended for by the defendant and reversed the judgment of conviction.—*Commonwealth v. Corbett, 29 N. E. (2d) 151 (Mass., 1940).*

Osteopathy: Right of Osteopath to Prescribe Narcotics.—The narcotic act of Pennsylvania provides that its proscriptions shall not apply to "licensed physicians" in the regular course of their practice. The act does not define the term "licensed physicians." The defendant, a licensed osteopath, was indicted for prescribing morphine sulfate in violation of that act. The trial court entered an order sustaining the defendant's demurrer and quashing the indictment, and the commonwealth appealed to the superior court of Pennsylvania.

The defendant contended that a person duly licensed to practice osteopathy was a "licensed physician" within the meaning of the narcotic act. The accepted definition of a "physician," said the superior court, is "a person skilled in physic or the art of healing; one duly authorized to treat diseases, especially by medicines." The court admitted that the word "physician" is most frequently used to refer to a doctor of medicine but said that it also includes the adherents of other schools authorized to treat diseases. Under the Pennsylvania osteopathic act, the court pointed out, osteopathy is recognized as "a complete and independent scientific system." In no less than seven instances in the body of that act, said the court, persons licensed to practice osteopathy are referred to as "osteopathic physicians." Such classification in the very act determining an osteopath's qualifications is, held the court, conclusive evidence that "licensed osteopaths" are "licensed physicians" and therefore within the exception to the prohibitions of the narcotic act. In conclusion, the court advised that if the defendant had exceeded his authority as an osteopath when he prescribed narcotics, "as the information tends to indicate," he should have been charged with practicing medicine without a license rather than with violating the narcotic act.

In a dissenting opinion, two judges pointed out that, under the Pennsylvania statutes, an "osteopath" is defined as an individual licensed "to practice osteopathy," an "osteopathic surgeon" as one licensed "to practice osteopathy and osteopathic surgery," and a "physician" as one licensed "to engage in the practice of medicine and surgery in any or in all of its branches." These definitions clearly indicated to the dissenting judges that the terms "osteopath," "osteopathic surgeon" and "physician" have three different and distinct meanings. The osteopathic act specifically provides that osteopathy "opposes the introduction of drugs into the body organism as curative agencies" and that the practice of osteopathy is not to be construed as the practice of medicine. Since osteopaths do not practice medicine and do not administer drugs or medicine in the regular course of their practice, continued the dissenting opinion, no specific exception in favor of osteopathy was thought necessary or advisable by the legislature when it enacted the narcotic act. Commenting on the reasoning of the majority based on the fact that the osteopathic act refers to its licentiates as osteopathic physicians, the dissenting judges also pointed out that the veterinary act refers to its licentiates as veterinary physicians. Using the same analogy as that found in the majority opinion, said the dissenting judges, it would be necessary to conclude that the word "physician" in the narcotic act included veterinarian and, in the opinion of these judges, "that was not intended, and is not the fact."

Pursuant to the majority opinion, the judgment in favor of the defendant was accordingly affirmed. Subsequently the Supreme Court refused to entertain an appeal by the commonwealth.—*Commonwealth v. Cohen, 15 A. (2d) 730 (Pa., 1940).*

Malpractice: Blindness Attributed to Refrigerant; Treatment Allegedly Negligent.—As the plaintiff was attempting to repair an electric refrigerator, an explosion occurred and the refrigerant, sulfur dioxide, came in contact with his eyes. The defendant physician was immediately called and arrived at the plaintiff's home in about fifteen minutes. In the meantime the plaintiff applied a wet compress to his eyes. When the defendant appeared the plaintiff explained how the accident had happened and said he thought the refrigerant was ammonia. The defendant examined the refrigerator however and told the plaintiff that he didn't think it contained ammonia but that he wasn't sure what kind of gas it was. He then made as thorough an examination of the plaintiff's eyes as was possible under the circumstances but did not render any treatment. The plaintiff was advised to stay outside in the fresh air and sunlight for a "couple of hours." At no time during the defendant's visit did the plaintiff complain of any pain. Shortly thereafter, however, the plaintiff experienced pain in his eyes and difficulty in breathing. He was taken to a hospital, where for the next twenty-four hours various fluids of one kind or another were constantly injected into his eyes. No opiates were administered. When he left the hospital the next day he was totally blind, and his sight never returned. Subsequently the plaintiff sued the defendant physician for damages alleged to have been caused by the defendant's negligence. From a judgment for the plaintiff, the defendant appealed to the Supreme Court of Washington.

The essence of the plaintiff's contention was that the defendant did not exercise reasonable care and skill in that he failed to irrigate the plaintiff's eyes with water. Expert witnesses for both parties testified that sulfur dioxide on contact with moisture immediately forms sulfurous acid and that sulfurous acid is very destructive. The plaintiff's expert testified that, in an emergency, the safest thing to do was to throw clean water in the patient's face in an attempt to remove or dilute any fluid or gaseous irritant. He would not admit, however, that such action by the defendant would, either wholly or partly, have saved the plaintiff's vision, although he thought it would probably have diminished the pain. The Supreme Court recalled that the plaintiff had made no complaint of pain during the defendant's visit and further pointed out that during most of that time the plaintiff held a saturated bandage over his eyes. The experts who testified on behalf of the defendant stated that the action of sulfurous acid is so rapid that nothing the defendant could have done would have saved the plaintiff's eyesight. In fact one of them said that damage to the eyes from sulfurous acid is almost instantaneous, a matter of seconds rather than minutes, and that after "a period of a moment or two there would be practically no hope of retention of vision or restoration of vision." These witnesses

also warned of the danger of putting ordinary water, which is not sterile and free from bacteria, into an already injured eye.

The Supreme Court held that a physician is not liable merely for making a wrong diagnosis unless an improper treatment follows. Here the defendant could not be held liable, continued the court, for failing to treat a condition of which he was unaware when the evidence showed that, even if he had been fully advised, he would not have acted differently. In conclusion the court held that, in view of the serious disagreement among qualified experts as to the advisability of so doing, the defendant was not guilty of malpractice in failing to apply water to the plaintiff's eyes. The judgment for the plaintiff was accordingly reversed.—*Peddicord v. Lieser, 105 P. (2d) 5 (Wash., 1940).*

Dental Practice Acts: Extent of Board's Discretionary Powers.—The plaintiff applied for a writ of mandamus to compel the defendant Florida State Board of Dental Examiners to issue him a certificate to practice dentistry in Florida or, in the alternative, to produce in court the examination papers written at certain previous examinations conducted by the board and cause them to be regraded by such method as the court might deem proper. The petition alleged that the preliminary moral, scholastic and professional qualifications of the plaintiff had been duly accepted by the defendant board and that he had passed the required examination with a sufficiently high mark, but that the defendant, even after three examinations, illegally, unlawfully, capriciously and from prejudice "flunked" the plaintiff and refused to issue him a certificate to practice dentistry. The defendant filed a motion to quash the alternative writ and refused to plead further. The lower court entered an order overruling the defendant's motion and granting the writ, so the defendant appealed to the Supreme Court of Florida.

The Supreme Court said that when an applicant to take the examination for a certificate to practice dentistry has complied with all the requirements of the law and the board has approved his application and admitted him to the examination, it becomes the duty of the board to issue him a certificate if he makes the mark required to pass. The effect of the defendant's motion to quash was to admit as true all facts sufficiently pleaded in the plaintiff's petition. The character and qualifications of the plaintiff were therefore conceded. The Supreme Court admitted that the defendant was vested with some discretionary powers. When an applicant applies and presents his credentials to take the examination, the board is the judge of these and it may reject the applicant if not shown to meet all the requirements. After he has qualified and passed the examination, in the absence of adverse showing, he cannot be deprived of a certificate. Administrative boards, the court pointed out, are vested with no such arbitrary hegemony over individual rights as was charged in this case. "Ours is still a government of laws and not one of men actuated by caprice and arbitrary power. The highest duty of the man or board whose duty is to administer laws, rules or regulations is to see that they bear equally on all persons or groups." Accordingly the Supreme Court held that the writ of mandamus had been properly issued and the judgment for the plaintiff was therefore affirmed.—*York v. State ex rel. Jones, 197 So. 766 (Fla., 1940).*

Medical Practice Act: Suspension of License for Assisting Unlicensed Person to Practice.—The Board of Regents, on the basis of a report by the Committee on Grievances, suspended for six months the defendant's license to practice medicine in the state of New York. It appeared from the evidence that the defendant collaborated with a chemist in attempting to remove a birthmark by the application of a new preparation, the formula for which was secret to the defendant and the chemist. The defendant permitted the chemist to treat and administer the preparation to the patient. The supreme court, appellate division, third department, New York, held that by this conduct the defendant assisted an unlicensed person to practice medicine unlawfully. The judgment of the Commissioner of Education, suspending the plaintiff's license to practice medicine, was therefore affirmed.—*La Roe v. Board of Regents of University of State of New York, 23 N. Y. S. (2d) 265 (N. Y., 1940).*

Society Proceedings

COMING MEETINGS

Alabama, Medical Association of the State of, Montgomery, Apr. 21-23. Dr. D. L. Cannon, 519 Dexter Avenue, Montgomery, Secretary.

American Association for the Study of Goiter, Atlanta, Ga., June 1-3. Dr. Thomas C. Davison, 478 Peachtree St. N.E., Atlanta, Ga., Secretary.

American Association for the Study of Neoplastic Diseases, Winston-Salem, N. C., April 23-25. Dr. Eugene R. Whitmore, 2139 Wyoming Ave. N.W., Washington, D. C., Secretary.

American Association for the Surgery of Trauma, Boston, June 4-6. Dr. Gordon M. Morrison, 320 Commonwealth Ave., Boston, Secretary.

American Association of Genito-Urinary Surgeons, Hershey, Pa., May 27-29. Dr. Charles C. Higgins, 2020 East 93d St., Cleveland, Secretary.

American Association of Industrial Physicians and Surgeons, Cincinnati, Apr. 13-17. Dr. Edward C. Holmblad, 28 East Jackson Blvd., Chicago, Managing Director.

American Association of the History of Medicine, Atlantic City, N. J., May 3-5. Dr. Henry E. Sigerist, 1900 East Monument St., Baltimore, Secretary.

American Association on Mental Deficiency, Boston, May 13-16. Dr. Neil A. Dayton, 100 Nashua St., Boston, Secretary.

American College of Physicians, St. Paul, Apr. 20-24. Mr. E. R. Loveland, 4200 Pine St., Philadelphia, Executive Secretary.

American Dermatological Association, Hot Springs, Va., May 31-June 4. Dr. Harry R. Foerster, 208 East Wisconsin Ave., Milwaukee, Secretary.

American Federation for Clinical Research, Minneapolis, Apr. 20-21. Dr. Thomas M. Durant, 3401 North Broad St., Philadelphia, Secretary.

American Laryngological Association, Atlantic City, N. J., May 25-27. Dr. Charles J. Imperatori, 108 East 38th St., New York, Secretary.

American Laryngological, Rhinological and Otological Society, Atlantic City, N. J., June 1-3. Dr. C. Stewart Nash, 227 Alexander St., Rochester, N. Y., Secretary.

American Medical Women's Association, Atlantic City, N. J., June 6-7. Dr. Ada Chree Reid, 102 East 22d St., New York, Secretary.

American Neurological Association, Chicago, June 4-6. Dr. Henry A. Riley, 117 East 72d St., New York, Secretary.

American Ophthalmological Society, Hot Springs, Va., June 1-3. Dr. Eugene M. Blake, 303 Whitney Ave., New Haven, Conn., Secretary.

American Orthopedic Association, Baltimore, June 3-6. Dr. Charles W. Peabody, 474 Fisher Bldg., Detroit, Secretary.

American Otological Society, Atlantic City, N. J., May 28-29. Dr. Isidore Friesner, 101 East 73d St., New York, Secretary.

American Pediatric Society, Sky Top, Pa., Apr. 30-May 2. Dr. Hugh McCulloch, 325 North Euclid Ave., St. Louis, Secretary.

American Psychiatric Association, Boston, May 18-22. Dr. Winfred Overholser, St. Elizabeths Hospital, Washington, D. C., Secretary.

American Society for Clinical Investigation, Atlantic City, N. J., May 4. Dr. Eugene M. Landis, University of Virginia Hospital, Charlottesville, Va., Secretary.

American Society of Clinical Pathologists, Philadelphia, June 5-7. Dr. Alfred S. Giordano, 531 North Main St., South Bend, Ind., Secretary.

American Therapeutic Society, Atlantic City, N. J., June 4-6. Dr. Oscar B. Hunter, 1835 Eye St. N.W., Washington, D. C., Secretary.

American Urological Association, New York, June 1-4. Dr. Clyde L. Deming, 789 Howard Ave., New Haven, Conn., Secretary.

Arizona State Medical Association, Prescott, May 25-30. Dr. W. Warner Watkins, 15 East Monroe St., Phoenix, Secretary.

Arkansas Medical Society, Hot Springs National Park, Apr. 27-29. Dr. W. R. Brooksher, 602 Garrison Ave., Fort Smith, Secretary.

Association of American Physicians, Atlantic City, May 5-6. Dr. Hugh J. Morgan, Vanderbilt University Hospital, Nashville, Tenn., Secretary.

California Medical Association, Del Monte, May 4-7. Dr. George H. Kress, 450 Sutter St., San Francisco, Secretary.

Connecticut State Medical Society, Middletown, June 3-4. Dr. Creighton Barker, 258 Church St., New Haven, Secretary.

Florida Medical Association, Hollywood, Apr. 13-15. Dr. Shaler Richardson, 111 West Adams St., Jacksonville, Secretary.

Georgia, Medical Association of, Augusta, Apr. 28-May 1. Dr. E. D. Shanks, 478 Peachtree St. N.E., Atlanta, Secretary.

Illinois State Medical Society, Springfield, May 19-21. Dr. Harold M. Camp, 224 South Main St., Monmouth, Secretary.

Iowa State Medical Society, Des Moines, Apr. 15-17. Dr. Robert L. Parker, 3510 Sixth Ave., Des Moines, Secretary.

Kansas Medical Society, Wichita, May 11-14. Mr. C. G. Munns, 112 West Sixth St., Topeka, Executive Secretary.

Louisiana State Medical Society, New Orleans, Apr. 27-29. Dr. P. T. Talbot, 1430 Tulane Ave., New Orleans, Secretary.

Maryland, Medical and Chirurgical Faculty of, Baltimore, Apr. 28-30. Dr. Richard T. Shackelford, 1211 Cathedral St., Baltimore, Secretary.

Massachusetts Medical Society, Boston, May 26-27. Dr. Michael A. Tighe, 8 Fenway, Boston, Secretary.

Medical Library Association, New Orleans, May 7-9. Miss Anna C. Hult, 25 Shattuck St., Boston, Secretary.

Mississippi State Medical Association, Jackson, May 12-14. Dr. T. M. Dye, P. O. Box 295, Clarksdale, Secretary.

Missouri State Medical Association, Kansas City, Apr. 27-29. Mr. E. H. Bartelsmeyer, 634 North Grand Blvd., St. Louis, Executive Secretary.

National Gastroenterological Association, New York, June 3-5. Dr. G. Randolph Manning, 1819 Broadway, New York, Secretary.

National Tuberculosis Association, Philadelphia, May 6-9. Dr. Charles J. Hatfield, 1790 Broadway, New York, Secretary.

Nebraska State Medical Association, Omaha, May 4-7. Dr. R. B. Adams, 416 Federal Securities Bldg., Lincoln, Secretary.

New Hampshire Medical Society, Manchester, May 12-13. Dr. Carleton R. Metcalf, 5 South State St., Concord, Secretary.

New Jersey, Medical Society of, Atlantic City, Apr. 21-23. Dr. Alfred Stahl, 55 Lincoln Park, Newark, Secretary.

New York, Medical Society of the State of, New York, Apr. 27-30. Dr. Peter Irving, 292 Madison Ave., New York, Secretary.

New York State Association of Public Health Laboratories, Cooperstown, May 18. Miss Mary B. Kirkbride, New Scotland Ave., Albany, Secretary.

North Carolina, Medical Society of the State of, Charlotte, May 11-13. Dr. Roscoe D. McMillan, P. O. Box 232, Red Springs, Secretary.

North Dakota State Medical Association, Jamestown, May 18-20. Dr. L. W. Larson, 221 Fifth St., Bismarck, Secretary.

Ohio State Medical Association, Columbus, Apr. 28-30. Mr. C. S. Nelson, 79 East State St., Columbus, Executive Secretary.

Oklahoma State Medical Association, Tulsa, April 22-24. Mr. R. H. Graham, 210 Plaza Court Bldg., Oklahoma City, Executive Secretary.

Rhode Island Medical Society, Providence, June 3-4. Dr. William P. Buffum, 122 Waterman St., Providence, Secretary.

Society for the Study of Asthma and Allied Conditions, Atlantic City, N. J., May 2. Dr. W. S. Spain, 116 East 53d St., New York, Secretary.

Pacific Coast Oto-Ophthalmological Society, Portland, Ore., May 11-14. Dr. C. Allen Dickey, 450 Sutter St., San Francisco, Secretary.

South Carolina Medical Association, Myrtle Beach, May 19-21. Dr. Julian A. Price, 105 West Cheves St., Florence, Secretary.

South Dakota State Medical Association, Sioux Falls, May 13-15. Dr. Clarence E. Sherwood, 107½ Egan Avenue South, Madison, Secretary.

Tennessee State Medical Association, Memphis, Apr. 14-16. Dr. H. H. Shoulders, 706 Church St., Nashville, Secretary.

Texas, State Medical Association of, Houston, May 11-14. Dr. Holman Taylor, 1404 West El Paso St., Fort Worth, Secretary.

CENTRAL SOCIETY FOR CLINICAL RESEARCH

Fourteenth Annual Meeting, Held in Chicago, Nov. 7 and 8, 1941

The President, DR. LAWRENCE D. THOMPSON, St. Louis, in the Chair

(Continued from page 1246)

Treatment of Parathyroid Tetany

DR. ELMER L. SEVRINGHAUS, Madison, Wis.: Although it has been assumed that the best substitution therapy in hypoparathyroidism is the use of dihydrotachysterol, a recent discussion by McLean indicates that vitamin D is equally effective. Observations on 3 patients with post-thyroidectomy tetany and 1 with idiopathic hypoparathyroidism confirm this point of view. The approximate equivalence in potency is between 1 mg. of dihydrotachysterol (of commercial grade) and 40,000 international units of vitamin D. Comparison of retail costs shows that therapy with the vitamin preparations would cost from $2 to $8 as against $1 for dihydrotachysterol. The greatest differential exists when the two types of material are secured from the same manufacturer. The advantages of using calcium chloride rather than the lactate, gluconate or phosphate as adjuvants in treating tetany are also demonstrable. Doses of 1 Gm. of the chloride are well tolerated if the salt is taken in the form of a 25 per cent solution in syrup of glycyrrhiza.

DISCUSSION

DR. ROBERT W. KEETON, Chicago: My associates and I have had an unusually interesting case of tetany under observation for a period of approximately four years. The patient had high grade mitral stenosis with but little cardiac reserve. In the days when total thyroidectomy was popular, this operation was performed on her. After the operative procedure she had a great deal of difficulty with tetany and decompensation. The decompensation did not respond to digitalis or to adequate doses of thyroid. We were able to establish compensation by the use of calcium and by controlling the tetany. This experiment was repeated on several occasions; so it confirms in an interesting way the problem dwelt on by Dr. Sevringhaus; namely, tetany in a heart on the border of compensation may be a factor in producing decompensation and its control a factor in maintaining compensation. This patient was taking 1,000,000 units a day of vitamin D_2 with indifferent success. We had continually to resort to calcium. We then changed to dihydrotachysterol with a better result, but the control was not entirely satisfactory. She was given a low phosphorus diet with much greater success. While she was on this regimen pellagra developed, which was controlled by therapy with nicotinic acid. At present she is on a general diet and takes a colloidal suspension of aluminum hydroxide and dihydrotachysterol, and her condition is well controlled.

DR. E. PERRY MCCULLAGH, Cleveland: In the treatment of parathyroid tetany it is a practical matter indeed to give the patient as much calcium as possible because all other forms of treatment are expensive. We believe that more total calcium can be given to the patient as calcium lactate than as calcium chloride because as a rule the patient tolerates the lactate much better. In the majority of cases tetany will be completely controlled without any other measures if the patient is given sufficient calcium. Apparently a patient can take large doses of calcium lactate for many years without any disturbance. Our patients with severe tetany are given as much calcium lactate as 3 heaping teaspoons four times a day. This supplies a great deal of calcium, and it would be difficult to give the same amount in the form of calcium chloride. It occasionally happens that the patient does not tolerate calcium lactate in powder form; a simple solution can then be made at home by boiling the drug in water.

DR. CYRIL M. MACBRYDE, St. Louis: I have had the same problem that Dr. Sevringhaus has been describing here. Another practical point is that it is important to keep these patients on a diet as nearly normal as possible. It is not well to keep the patient on a low phosphorus diet all the rest of his life. It is well to supply milk even though it does give the patient a pretty good phosphorus intake. The patient may take a quart of milk a day. I used to use a lot of phosphorus diets and restrict milk, before dihydrotachysterol and vitamin D were available. My experience is that it is no longer necessary to keep the patient on a low phosphorus diet. I believe the condition is more completely and more satisfactorily controlled if the patient is given an ordinary diet. I find that large doses of calcium lactate can be easily taken by patients with parathyroid tetany, and vitamin D can be given; so the control is completely satisfactory. I have not seen what Dr. Sevringhaus has spoken of as an unstable blood calcium level. It has been my experience that the blood calcium level has been stable. It has remained practically stable for years in patients given dihydrotachysterol or vitamin D or 10 to 15 Gm. of calcium lactate by mouth a day and no additional phosphorus.

DR. FREDERICK S. COOMBS, Youngstown, Ohio: I have had occasion recently to treat a woman with tetany from postoperative causes. At the start of therapy the blood calcium was 5 mg. per hundred cubic centimeters. In ten days, with the use of dihydrotachysterol and a quart of skimmed milk a day, the blood calcium came up to 8.6 mg. and she was relieved of her symptoms. I have not used additional calcium by mouth. I wonder whether this calcium is not excreted in the intestine.

DR. ELMER L. SEVRINGHAUS, Madison, Wis.: One of the issues that comes of this discussion is the definition of complete control of tetany. It is not as easy to describe as complete control of diabetes or of hypothyroidism, but it ought to be attempted clinically. Complete control does not mean only that there is freedom from tetanic symptoms. This can be confirmed by observations made by the patients given calcium who have no tetanic seizures. They are made much better by therapy with solution of parathyroid, vitamin D or dihydrotachysterol. The definition of complete control needs to be studied. I feel that when the cost of materials becomes lower so that vitamin D or dihydrotachysterol can be used in optimal levels over a

long period, one can secure stability resembling the normal. That is what would be expected if one can supply the deficiency. To date I have had to use minimal doses to secure fair health rather than excellent health. If one can give optimal doses of vitamin D, one can study calcium absorption from the bowel and find how much calcium is necessary for a normal intake.

The Distribution of Serum Proteins in Hepatic Diseases as Determined by Electrophoresis

DRS. SEYMOUR GRAY and E. S. GUZMAN-BARRON, Chicago: When serum proteins are subjected to the action of an electric current at low temperatures and in well buffered solutions they migrate according to their electric mobilities. This property was taken advantage of by Tiselius to separate and measure quantitatively the concentration of the different proteins which exist in the blood serum. The Tiselius electrophoresis apparatus, as modified by Longsworth, has been used to study the distribution of the proteins in the blood serum of patients with a variety of diseases of the liver. Electrophoresis patterns of the serum of patients with acute hepatitis reveal an alteration of the distribution of albumin and of the three globulins, alpha, beta and gamma; in most cases in which the albumin-globulin ratio was normal there was observed a large increase of gamma globulin. In cases of cirrhosis of the liver there was an increase of beta and gamma globulin; in cases of stone of the common bile duct and severe jaundice the beta globulin was increased; changes were also observed in cancer of the liver.

Palindromic Rheumatism

DRS. PHILIP S. HENCH and EDWARD F. ROSENBERG, Rochester, Minn.: Features of this disease are multiple afebrile attacks of acute arthritis, periarthritis and sometimes also paraarthritis, with pain, swelling, redness and disability of generally one, sometimes several, small or large joints in an adult of either sex. Attacks appear suddenly, develop rapidly, generally last only a few hours or days and then disappear completely but recur at short or long irregularly spaced intervals. Despite the transitory presence of an acute or a subacute inflammatory reaction in joint tissues and a fibrinopurulent exudate in the articular cavity, little or no constitutional reaction of abnormality is evidenced by the results of laboratory tests, and no significant functional, pathologic or roentgenographic residues occur even after years of disease and scores or even hundreds of attacks.

Of 34 patients, 19 were female and 15 male. Patients were aged 13 to 68 (generally 20 to 39) at the onset of the disease, which at the time of their admission to the Mayo Clinic had lasted from three months to twenty-five years (the average was seven years). Attacks had occurred at the rate of two to ten yearly in 9 cases, twenty to sixty yearly in 17 cases, one hundred to two hundred yearly in 3 cases and two hundred and fifty or more a year in 5 cases. Four patients had had "hundreds" of attacks; the other 30 had had at least four thousand, nine hundred and thirty attacks and an average of at least one hundred and sixty-four attacks per patient within the average of seven years of illness, or twenty-three attacks per patient yearly.

Attacks lasted usually one to three, rarely more than seven, days. The intervals between attacks varied from a few days to six months. In 90 per cent of the cases the attacks were monarticular and chiefly in a finger, wrist, shoulder, knee, toe or elbow. Pain was mild to severe; temporary disability was often considerable. Para-articular inflammation of short duration (six to twenty-four hours) at characteristic sites affected 10 patients. Intracutaneous or subcutaneous nodules were present transiently in 3 cases. Anorexia, loss of weight, anemia, leukocytosis and eosinophilia (the last in both blood and tissues) were absent. The sedimentation rate was normal or slightly elevated; moderate lipemia was present. Roentgenograms of joints revealed nothing abnormal. Biopsies showed acute inflammation during attacks but no gross or microscopic abnormalities between attacks; cultures of tissue removed were sterile.

The cause of the disease was not determined. The hypothesis that allergy was the causative factor could not be proved. The disease was distinguished from rheumatoid arthritis, intermittent hydrarthrosis, gout, angioneural arthrosis (Cohen, 1913) and the "allergic rheumatism" of Kahlmeter (1939). Of the many remedies tried none gave impressive results; fever therapy may have modified the condition somewhat. Follow-up data in 27 cases indicated that, although spontaneous cure occasionally occurred, the condition tended to continue with its pattern relatively unchanged, but permanent crippling did not occur despite thousands of attacks suffered during a total of three hundred and seven years of illness (two hundred and forty-two years before plus sixty-five years after admission).

DISCUSSION

DR. RICHARD H. FREYBERG, Ann Arbor, Mich.: The syndrome which Dr. Hench has described is indeed interesting. I would urge that every one who sees patients with rheumatic disease keep this description in mind and attempt to identify the condition. It is my belief that there are different types of inflammatory joint disease whose cause is not known, all of which are commonly called "rheumatoid arthritis" even though the syndrome does not have many of the characteristics of rheumatoid arthritis. In other words, I wonder if rheumatoid arthritis is not the wastebasket into which various types of rheumatic disease incompletely understood and not readily identified as distinct forms of rheumatism are unjustifiably thrown. Certainly the condition in the cases described by Drs. Hench and Rosenberg does not seem to be like the commonly recognized types of rheumatic disease. The follow-up study of these cases will be interesting. I should like to ask whether there is any tendency for this disease to occur in families.

DR. LEE FOSHAY, Cincinnati: Was there opportunity to try animal transmission experiments with materials obtained from any of these patients?

DR. LAWRENCE D. THOMPSON, St. Louis: I have been following a patient in St. Louis for nine months whose condition unquestionably corresponds to the condition described. There are two interesting facts in this case. In the first place, Dr. Foshay might be interested to know that the agglutinations for the patients with undulant fever were positive in a dilution of 1:120. The second point is that, by merely prescribing for this patient a diet from which I had eliminated six or eight foods which in my own experience have been most common allergic offenders, I was able to reduce the symptoms from daily attacks to sudden unexplainable attacks at weekly or biweekly intervals. In other words, I seemed to get some improvement by working along the allergy line. I should like to know whether Dr. Foshay has seen patients with undulant fever with symptoms similar to those described by Dr. Hench.

DR. PHILIP S. HENCH, Rochester, Minn.: We found no familial or hereditary features in this disease. To answer Dr. Foshay's question, we could not prove the infective nature of palindromic rheumatism. The attacks bore no relationship to acute exogenous infections, such as sore throats and influenza. Most of the patients had had their foci of infection removed without relief before we saw them. Cultures of material from remaining foci revealed no significant organisms; the bacteria found therein produced no positive cutaneous reactions in patients or significant lesions in animals. Cultures of material removed for biopsy were sterile. However, we did not do what Dr. Foshay suggests, i. e. grind up a nodule or other affected tissue and use this material for inoculation experiments. We will try to do that. Agglutination tests for Brucella abortus were made in 5 cases: they gave negative results in 4 and a slightly positive result (1:80) in 1, a reaction of doubtful significance. None of our patients had fever. I agree with Dr. Thompson that the allergic hypothesis seems attractive. We did our best to prove it but could not do so. Points against the allergic hypothesis were (1) the complete absence of orthodox clinical allergy in many of the cases, (2) the generally negative cutaneous reactions to various antigens including suspected foods, (3) the absence

of eosinophilia in blood or affected tissues, (4) the lack of resemblance between the pathologic reactions we noted in palindromic rheumatism and those in conditions known to be allergic (for example, urticaria), (5) the generally negative effect of epinephrine and histaminase and of histamine desensitization, (6) the negative provocative effect of histamine in large doses and (7) the negative results of provocative and therapeutic tests with suspected foods. One or two of our patients felt somewhat better (perhaps having fewer, shorter attacks) when they adhered to a diet free of suspected food antigens; the diet certainly did not stop the disease, although it may have modified it. I fully agree with Dr. Thompson that further investigation along the lines of allergy in this disease are in order, but my colleagues at the Mayo Clinic in the section for allergic diseases have about despaired of proving the presence of allergy. It is of special significance that 3 of our patients were physicians; they had been long puzzled as to the nature of their disease and had long since rejected as entirely inappropriate diagnoses such as rheumatoid arthritis or those of other known diseases of joints.

Cerebral Oxygen Consumption Following Experimental Injury to the Head

Drs. John L. Lindquist and George V. LeRoy, Chicago: To investigate the pathogenesis of the symptoms of cerebral concussion, studies of the cerebral oxygen consumption and cerebral blood flow were made. A Rein type thermostromuhr was used to measure the cerebral minute blood flow, and the arteriovenous oxygen difference was determined manometrically on blood drawn simultaneously from an artery and a jugular vein. All experiments were performed on dogs lightly anesthetized with soluble pentobarbital. In the first experiments cerebral blood flow and oxygen consumption were measured at intervals from twenty to forty minutes after a severe cranial trauma. The usual result of the injury was a rapid and early decline in both the blood flow and the oxygen consumption. In a series of 8 dogs the decrease in the former value averaged 17 per cent and in the latter 24 per cent.

Another series of observations was made on 10 dogs whose heads were traumatized twenty-four hours earlier. At this time the following deviations from normal were observed: (1) The cerebral blood flow averaged 19 per cent below normal; (2) the cerebral oxygen consumption averaged 21 per cent below normal; (3) the arterial oxygen saturation was 73, 76, 78, 81, 84, 89 and 91 per cent, respectively, in the dogs for which it was determined. It was apparent from the data that the altered oxygen consumption of the brain was not due to stasis or to arterial hypoxemia but was due to an inability of the brain to utilize the gas.

The fact having been established that the cerebral oxygen consumption and blood flow were still subnormal twenty-four hours after injury, it was desirable to observe the influence of two commonly used therapeutic agents on these functions. Four of the animals studied twenty-four hours after injury were given hypertonic sugar solutions, and from 3 cerebrospinal fluid was removed by cisternal drainage. Three animals were used for controls. The injections of hypertonic solutions of dextrose and sucrose had no effect on the blood flow. This is in accord with other investigators' studies. The effect on oxygen consumption, however, was striking. With 50 per cent sucrose solution, oxygen utilization increased by 45 and 100 per cent. With dextrose the increases were 90 per cent and 130 per cent respectively. After cisternal drainage there was a 25 per cent improvement in the cerebral blood flow. The oxygen consumption increased 100 per cent and 260 per cent in 2 instances. For technical reasons there was no apparent change in the third animal. Suitable control experiments were performed.

These experiments demonstrate a physiologic basis for the altered cerebral activity after injury to the head severe enough to cause contusion. They show also that if reduced cerebral oxygen consumption occurs it may be corrected by the administration of hypertonic solutions of dextrose and sucrose or by the drainage of cerebrospinal fluid. We think that these experiments in addition to suggesting a reason for the alterations in consciousness suggest also a rational basis for the use of two common therapeutic agents.

The Use of Poudrage in Chronic Pneumothorax and Cystic Disease of the Lung

Dr. Dan W. Myers, St. Louis: In 25 of 45 instances of spontaneous pneumothorax observed the pneumothorax was of the so-called benign variety unaccompanied by recognizable pulmonary disease. Prompt closure of the pleuropulmonary communication and reexpansion of the lung ensued in all but 1 case. After protracted rest, intrapleural instillations of blood and dextrose and the trauma of thoracoscopic inspection of the pleura had failed to produce closure of the fistula, pleural poudrage was carried out, 5 Gm. of iodized talc being sprayed into the pleural space. Prompt sealing of the pleurapulmonary communication and reexpansion of the lung resulted. The belief is expressed that iodized talc is a more effective agent for the production of aseptic pleuritis than the agents previously employed in the obliteration of such fistulas. Treatment of a giant tension cyst of the lung by means of intracystic powdering with iodized talc also was successful.

DISCUSSION

Dr. William H. Bunn, Youngstown, Ohio: In 1924 I had a patient aged 46 who had dyspnea produced by a collection of fluid in the right side of the chest. On withdrawal of the fluid there were many cholesterol crystals; their presence, of course, suggested that the fluid had been present for months or years. Repeated withdrawal of the fluid meant only that it recurred. Artificial pneumothorax was instituted after each withdrawal of fluid. Still the fluid kept forming. The patient unfortunately had a fall down several steps and struck her side forcibly enough to tear the lung. After this high air pressure built up in the right thoracic cavity. This required aspiration on several occasions. Finally gomenol (a cajuput oil from Melalenca viridiflora) was instilled, adhesions quickly formed and complete recovery occurred. In 1 other case gomenol was successfully instilled into the pericardial sac of a boy who had required (until this measure was instituted) repeated tappings to relieve the pressure of accumulations of pericardial fluid. There is a place in clinical medicine for some stimulant to the formation of adhesions.

Urea and Sulfonamide Urolithiasis

Drs. Sidney S. Sobin, Lawrence M. Aronberg and Harry Rolnick, Chicago: Previous studies on the solubility of the acetyl sulfonamides in human urine (presented before this society in November 1940) demonstrated that the solubility of these substances increased in urine of increasing specific gravity (or concentration). The probable relationship of this unusual phenomenon to an increasing amount of urea was suggested and evidence presented.

In the present work the effect of urea on the renal concretions resulting from the oral administration of sodium acetylsulfapyridine to white rats was studied. Animals receiving sodium acetylsulfapyridine with and without urea were studied for seven to nine days. Changes in weight, water intake and general nutrition were noted. Animals treated with sodium acetylsulfapyridine alone frequently presented hematuria which was not constant from day to day. Hematuria, however, was not observed in any of the rats receiving urea with the drug. The animals not receiving urea frequently appeared ill and listless and took their food poorly. This was not true of the urea treated rats.

Microscopic review of the kidney tissues revealed concretions in many of the animals receiving sodium acetylsulfapyridine alone. In animals receiving urea as well, no concretions were found. Extreme cloudy swelling and simple necrosis of the tubular elements and loops was encountered in the controls. This was only rarely seen in the urea treated rats.

It is suggested that urea has some solvent action on acetylsulfapyridine crystals in vivo as well as in vitro.

(To be continued)

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

23:1-146 (Jan.) 1942

Some Immediate Causes of Cardiac Infarction. E. P. Boas, New York. —p. 1.
Heart Disease and Public Health: Current Trends and Prospects. L. I. Dublin, New York.—p. 16.
*Value of Combined Measurements of Venous Pressure and Arm to Tongue and Arm to Lung Circulation Times in Study of Heart Failure. H. H. Hussey, J. J. Wallace and J. C. Sullivan, Washington, D. C.—p. 22.
Action of Angiotonin on Completely Isolated Mammalian Heart. V. Lorber, Minneapolis.—p. 37.
Autonomic Mechanism of Heat Conservation and Dissipation: II. Effects of Cooling Body; Comparison of Peripheral and Central Vasomotor Responses to Cold. O. R. Hyndman and J. Wolkin, Iowa City.—p. 43.
*Electrocardiographic Study of Effects of Boxing. J. S. Butterworth and C. A. Poindexter, New York.—p. 59.
*Recording of Fetal Electrocardiogram. J. W. Ward and J. A. Kennedy, Nashville, Tenn.—p. 64.
Study of Seventy Rheumatic Families. A. Rosenblum and Ruth L. Rosenblum, Chicago.—p. 71.
Resting Blood Flow and Peripheral Vascular Responses in Hypertensive Subjects. D. I. Abramson and S. M. Fierst, Cincinnati.—p. 84.
Coarctation of Aorta in Children: Syndrome of Constriction of Isthmus of Aorta, with Involvement of Origin of Left Subclavian Artery. S. P. Schwartz and D. Greene, New York.—p. 99.
Improved Blood Pressure Cuff. W. S. Collens and L. C. Boas, Brooklyn.—p. 114.
Device for Obtaining Electrocardiographic Leads from Precordium. M. S. White, Randolph Field, Texas.—p. 116.

Venous Pressure and Circulation Time in Heart Failure.—Hussey and his co-workers made one hundred and eighty-five simultaneous measurements of the venous pressure and circulation time of 100 patients with congestive heart failure. The study shows that the venous pressure is abnormally elevated or shows a significant rise when the abdomen is compressed and that the arm to tongue and the arm to lung circulation times are usually prolonged. When clinical improvement occurs the arm to tongue circulation time may remain prolonged after all other signs of heart failure have disappeared. This presumably indicates the persistence of left ventricular failure. The study of 7 patients suggested isolated left ventricular failure; the venous pressure and the arm to lung circulation time were normal, but the arm to tongue circulation time was prolonged. Among 34 patients with general heart failure the lung to tongue circulation time was within normal limits. This tends to impair the value of this measurement in the diagnosis of isolated right ventricular failure. In heart failure the venous pressure may be abnormally high or rise significantly on abdominal compression when other signs of failure are lacking. Repeated measurements of the venous pressure and circulation time in heart failure afford an objective means of following the course of the disease and are necessary for accurate diagnostic appraisal. The measurements often can be of value in ruling out heart failure.

Effect of Boxing on the Heart.—Butterworth and Poindexter obtained electrocardiograms of 35 boxers (16 to 24 years of age) before and after bouts. Before a bout the average heart rate was 81, and after the bout it was 115 beats a minute. Sinus arrhythmia was common before matches but was absent or slight at the higher rates after the matches. After the exercise there was a definite increase in the height of P_2 and P_3 and a decrease in the size of the T waves. The study presents no evidence that boxing has any traumatic effect on the normal heart of the young boxer.

Fetal Electrocardiogram.—Ward and Kennedy made forty-six recordings of the fetal heart beat during various stages of intrauterine life. They used a three channel, balanced amplifier and crystograph, an instrument developed to record electroencephalograms. Three abdominal leads were usually employed and were placed to form an equilateral triangle over the uterus. The curves were recorded in ink on paper by the crystograph, a permanent record thus being made. No developing was necessary. The length of pregnancy was calculated by assuming that conception occurred fourteen days after the last normal menstrual flow began. The fetal deflections measure about 30 microvolts. The fetal waves usually appear in one lead. Deflections were produced in thirty-one of the forty-six records. The remainder showed no definite fetal deflections, except one which was questionable. No positive tracing was obtained earlier than the sixteenth week of pregnancy. There was a sharp dividing line between the positive and negative records near the end of the fourth month. From the sixteenth week thirty-eight records were taken, and thirty-one of these were positive. For comparison records were made of 1 woman on the same day with the ordinary electrocardiographic apparatus and with the Offner amplifier and crystograph. With the former instrument, even with double standardization, no fetal waves were shown, but good fetal waves were obtained with the crystograph. The method should prove useful in the diagnosis of pregnancy, in ascertaining whether the fetus is living, in the diagnosis of multiple pregnancy and, experimentally, as a tool for studying fetal physiology.

American Journal of Hygiene, Baltimore

35:1-162 (Jan.) 1942

Multiple Sclerosis Problem in Baltimore City. L. C. Kolb, O. R. Langworthy and Marie Cakrtova, Baltimore.—p. 1.
Statistical Problems Involved in Application of National Institute of Health Swab for Diagnosis of Oxyuriasis. W. Sawitz, New Orleans, and B. D. Karpinos, Washington, D. C.—p. 15.
*Influence of Atmospheric Temperature and Humidity on Dryness of Oral Mucosa. C.-E. A. Winslow, L. P. Herrington and Jean Hunse Nelbach, New Haven, Conn.—p. 27.
Effect of Epinephrine on Toxicity of Nicotine. H. B. Haag and R. S. Fisher, Richmond, Va.—p. 40.
Diphtheria in Baltimore: Tonsillectomies as Related to Diphtheria Carrier Rates. K. F. Maxcy, J. J. Phair, Baltimore, and Mary Ruth Smith, Jackson, Miss.—p. 42.
Id.: Carrier Rate in Twelve Surveys, 1921-1939. J. J. Phair, Baltimore, and Mary Ruth Smith, Jackson, Miss.—p. 47.
Study in Active Immunization Against Epidemic Influenza and Pneumococcic Pneumonia at Letchworth Village: III. Results of Active Immunization Against Epidemic Influenza from 1937 to 1940. M. Siegel, R. S. Muckenfuss, M. Schaeffer, Harriet Leslie Wilcox and Ann G. Leider, New York.—p. 55.
*Environmental Control of Epidemic Contagion: I. Epidemiologic Study of Radiant Disinfection of Air in Day Schools. W. F. Wells, Mildred W. Wells and T. S. Wilder, Philadelphia.—p. 97.
Study of Certain Epidemiologic Features of Leptospiral Jaundice in Baltimore. T. G. Ward and T. B. Turner, Baltimore.—p. 122.
Inoculation of Canaries with Sporozoites from Isolated Malarial Oocysts. M. M. Brooke, Baltimore.—p. 134.
Study of Paroxysms Resulting from Induced Infections of Plasmodium Vivax. G. R. Coatney and M. D. Young, Columbia, S. C.—p. 138.
Feeding Habits of Gambusia Affinis Affinis, with Special Reference to Malaria Mosquito Anopheles Quadrimaculatus. A. D. Hess and C. M. Tarzwell.—p. 142.
Respiratory Metabolism of Malaria Parasite Plasmodium Cathemerium During Its Developmental Cycle. S. F. Velick, Baltimore.—p. 152.

Atmospheric Conditions and Oral Mucosa.—Winslow and his collaborators determined the effect of various degrees of temperature and humidity on the mucous membranes of 4 subjects. With a vapor pressure of up to or above $\frac{5}{10}$ inch of mercury the moisture of the surface of the oral mucosa, depending on variations in temperature and humidity, varied from a moderately high to an extremely high value. The variations were attributed to the physiologic changes in the vascular system of the mucosa. With vapor pressures below $\frac{5}{10}$ inch there was a definite dryness of the oral mucosa; its surface moisture was about half that observed at higher vapor pressures. The authors conclude that a pronounced drying effect on the mucosa must occur at air temperatures below 53 F. with any moisture content, at 60 with less than 77 per cent relative humidity, at 70 with less than 54 per cent relative humidity and at 80 F. with less than 39 per cent relative humidity. Whether the drying effect is harmful has not been determined, but, if it is harmful, outdoor air in winter must have as serious

an effect as dry indoor air. The effect can be controlled indoors with an air temperature of 70 F. and a relative humidity of more than 50 per cent.

Radiant Disinfection of Air.—The Wellses and Wilder report experiments which demonstrate that contained atmospheres of habitations constitute a vehicle for the epidemic spread of contagion. During the four years in the Germantown Friends School and the one year in the Swarthmore public schools when the air of the schoolrooms was irradiated there was no epidemic spread of contagion among the highly susceptible primary school children, although contagion did spread among less susceptible groups of older children in other departments of the schools whose rooms were not irradiated. The results suggest that the occurrence of contagious diseases at unfavorable times (measles in midwinter, when the danger of complicating streptococcic infections is high) and in unfavorable situations (such as that of an army in barracks) can be prevented by irradiation of air.

American J. Obstetrics and Gynecology, St. Louis

43:1-182 (Jan.) 1942. **Partial Index**

Nutrition Study in Pregnancy: Dietary Analyses of Seven Day Food Intake Records of 314 Pregnant Women, Comparison of Actual Food Intakes with Variously Stated Requirements and Relationship of Food Intake to Various Obstetric Factors. P. F. Williams and Florence G. Fralin, Philadelphia.—p. 1.

*Clinical Evaluation of Fetal Electrocardiography: Study of 100 Cases by New Technic and Improved Instrument. P. Bernstein and H. Mann, New York.—p. 21.

*Glomerular Filtration and Renal Blood Flow in Toxemias of Pregnancy. L. V. Dill, C. E. Isenhour, J. F. Cadden and N. K. Schaffer, New York.—p. 32.

Simultaneous Radiologic and Kinetic Recording of Uterine and Tubal Motility. M. D. Mayer, H. Newman and A. M. Ginzler, New York.—p. 52.

Chorionepithelioma: Study of Thirteen Cases. R. R. de Alvarez, Ann Arbor, Mich.—p. 59.

Gynecologic Tuberculosis: Brief Review of Thirty-Two Cases, Including One of Tuberculous Cervicitis. E. Eichner, A. Bookatz and L. Hirsch, Cleveland.—p. 66.

*Further Studies on Sterile and Fertile Periods in Women. L. J. Latz and E. Reiner, Chicago.—p. 74.

Inhibition of Lactation During Puerperium by Methyl Testosterone. P. M. Lass, New York.—p. 86.

Caffeine as Aid to Sodium Pentobarbital Analgesia in Labor. A. F. Daro and P. J. Stein, Chicago.—p. 94.

Use of Quick Freezing Methods in Gynecologic Practice: Preliminary Report. F. E. Hall, Chicago.—p. 105.

Bilateral Tubal Pregnancy. M. E. Cox and M. Steinberg, Charleston, S. C.—p. 120.

Desmoid Tumor of Back. J. A. Tuta and E. W. Fischmann, Chicago.—p. 124.

"Frog" Test (Xenopus Laevis) as Rapid Diagnostic Test for Pregnancy: Preliminary Report. A. I. Weisman, A. P. Snyder and C. W. Coates, New York.—p. 135.

Fetal Electrocardiography.—Bernstein and Mann recorded heart beats of 100 fetuses whose mothers were unselected consecutive patients presenting themselves at an antepartum clinic at the fifth or sixth month of gestation. Only 13 mothers were seen before the fifth month. The instrument used was the "cardiette," an unusually sensitive amplifying apparatus capable of detecting deflections up to 6 cm. per millivolt and having approximately six times the sensitivity of the standard string galvanometer. In only 2 cases were satisfactory fetal curves not exhibited at some time during pregnancy. Of one hundred and fifty-three tests performed on the 100 patients 75 per cent showed clearcut fetal curves. No positive electrocardiograms were obtained earlier than the fourth lunar month. The individual monthly percentage of positive results ranged from 53.8 to 96.5 per cent; the average from the fourth to the tenth lunar month was 77.8 per cent. In the last two months 96 per cent of forty-eight readings were positive. The fetal heart rate does not indicate the sex of the fetus, since the heart rates of infants of both sexes averaged 148.7 beats per minute. There was a tendency for a gradual but definite decline in the fetal heart rate to the eighth lunar month; from then on to delivery there was a slight rise. Fetal and maternal rates were not correlative; a change in one was not necessarily accompanied by a corresponding alteration in the other. The electrocardiogram furnished a reliable diagnostic test in pseudocyesis of the menopause, pregnancy suspected in amenorrhea with a large fibroid and huge ovarian cyst and in missed abortion. The electrocardiogram was successful in indicating fetal viability in 4 instances in which fetal movements were not felt and the fetal heart was inaudible. One multiple pregnancy was accurately diagnosed. Generally, fetal hearts show sinus arrhythmias and sometimes extrasystoles and varying degrees of partial block. A peculiar increased rate is produced in the presence of intrauterine anomalies. In instances of doubtful viability an electrocardiogram is indicated before cesarean section is performed.

Renal Blood Flow in Toxemias.—Dill and his associates determined the inulin and diodrast clearances of 8 normal pregnant women who were within one month of term, had had no previous history of hypertension or toxemia of pregnancy and had not had changes of blood pressure in the retinal vessels or albuminuria; of 10 patients who had albuminuria, the albumin in the urine amounting to more than 2 Gm. a day, hypertension, edema and a rapid gain in weight but no antecedent history of "toxemia of pregnancy" and who were classified as having "severe preeclampsia," and of 10 patients who had moderate to definite hypertension, mild to moderate albuminuria, a previous history of hypertension and changes in the eyegrounds and whose previous pregnancies were classified as "toxemic." In the "preeclamptic" and "hypertensive" patients the postpartum glomerular filtration tended to return to normal and the renal blood flow fell to a level definitely below normal. The same mechanism that produces hypertension without pregnancy probably is operative in the woman with "toxemia of pregnancy." Pregnancy modifies the disease quantitatively in that the renal blood flow is maintained despite moderate renal arteriolar constriction and qualitatively in that the afferent arteriolar tone is increased to a greater extent than in the nonpregnant hypertensive patient, but the differences are merely quantitative modifications of the same fundamental vascular abnormality.

Sterile and Fertile Periods in Women.—Latz and Reiner present a compilation of the data of some 1,000 record calendars sent in within the last year and a half by women who kept written records of menstruation, coition and ovulation for a number of years. For example, seven hundred and eighty-four thirty day cycles were recorded for 342 women; these same women also had other cycles. Ovulation and the number of coitions had on the various days of the cycle were recorded. For example, the 223 women who had, collectively, seven hundred and twenty-four twenty-four day cycles had among them ten coitions on the second day after the onset of menstruation, thirty-two on the third, seventy-eight on the fourth and so on. All told, there were 11,249 cycles and 49,356 coitions listed with no conceptions. Practical proof that ovulation must occur at about the time generally believed, that the time for fertilization of the ovum is short and that the life of the sperm cells in the female genitals is limited to less than forty-eight hours is had from the records of these women. If this were not the case, a number of pregnancies would have occurred, as it cannot be assumed that more than an average percentage of the couples furnishing the data were sterile. The authors believe that the data on 4,702 coitions of 114 couples (reported in The Journal, Oct. 19, 1935, p. 1241), on 11,222 coitions of 265 couples (*Illinois Medical Journal* **71**:210 [March] 1937) and on 54,027 coitions (under discussion) executed during the sterile period support the evidence that abstinence during the fertile period (as originally propounded by Knaus) prevents conception.

American Journal of Orthopsychiatry, Menasha, Wis.

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Clinical Application of Test of Imagination to Neurotic Children. Eva Ruth Balken and A. H. V. Veer, Chicago.—p. 68.

Diagnostic and Prognostic Significance of Differences Between Intelligence Quotient and Social Quotient: II. Relationship of Intelligence Quotient and Social Quotient to Age Level of Behavior Problem Children. L. A. Lurie, Florence M. Rosenthal and Louisa C. Outcalt, Cincinnati.—p. 104.

Group Studies of Preadolescent Delinquent Boys: Spontaneous Group Formations on Children's Psychiatric Ward of Bellevue Hospital. Pauline Rosenthal, New York.—p. 115.

The Stuttering Personality. J. F. Bender, Flushing, N. Y.—p. 140.

Child Guidance in Kindergarten to 6B Elementary School: Clinical and Educational Contributions of Three Year Program. S. Goldberg, New York.—p. 161.

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Reversals of Blood Pressure Responses Caused by Changes in Frequency of Brain Stem Stimulation. C. Berry, W. McKinley and R. Hodes, Chicago.—p. 338.
Renal Blood Flow in Experimental Renal Hypertension. A. C. Corcoran and I. H. Page, Indianapolis.—p. 361.
Mechanisms for Maintenance of Life in Newborn During Anoxia. H. E. Himwich, A. O. Bernstein, H. Herrlich, A. Chesler and J. F. Fazekas, Albany, N. Y.—p. 387.
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Central Pathway for Jaw Jerk. F. Harrison and K. B. Corbin, Memphis, Tenn.—p. 439.
Effect of Adrenal Cortical Compounds on Ketosis. R. A. Shipley, Cleveland, and Edith G. Fry, New Haven, Conn.—p. 460.
Increased Requirements of Pantothenic Acid and Vitamin B_6 During Experimental Hyperthyroidism. V. A. Drill and R. Overman, Princeton, N. J.—p. 474.
In Vivo and In Vitro Exchange of Phosphorus by Enamel and Dentin. C. P. Barnum and W. D. Armstrong, Minneapolis.—p. 478.
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Calcium in Gastric Mucus and Regulation of Gastric Acidity. Rhoda Grant, Montreal, Canada.—p. 496.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

47:1-190 (Jan.) 1942

Philosophical and Practical Aspects of Economics of Cancer Control: Janeway Lecture, 1941. E. H. Skinner, Kansas City, Mo.—p. 1.
Cancer of Nasal Cavity. W. S. MacComb and H. E. Martin, New York.—p. 11.
*Irradiation Pulmonary Fibrosis. B. P. Widmann, Philadelphia.—p. 24.
*Carcinoma of Lower Lip: Interval Statistical Survey of End Results in All Cases Treated at Brooklyn Cancer Institute, 1930 to 1939 Inclusive. W. E. Howes and F. J. La Rosa, Brooklyn.—p. 39.
Results of Conservative Treatment in Certain Cerebral Gliomas. E. L. Jenkinson and E. Oldberg, Chicago.—p. 50.
*Irradiation Sickness: Critical Study. S. S. Steinberg, Butte, Mont.—p. 56.
*Discussion on Surveys on Chest, with Comments on 14 by 17 Inch Film as Used in Canadian Army. G. E. Richards, Toronto, Canada.—p. 66.
Technical Factors Underlying Miniature Roentgenography of Chest. H. E. Potter, Chicago.—p. 71.
Evaluation of Methods for Mass Survey of Chest. A. C. Christie, Washington, D. C.—p. 76.
Value of Body Section Roentgenography (Planigraphy) for Demonstration of Tumors, Non-Neoplastic Disease and Foreign Bodies in Neck and Chest. B. R. Young, Philadelphia.—p. 83.
Fractures of Pelvis, with Special Reference to Associated Fractures of Sacrum. W. W. Furey, Chicago.—p. 89.
Time of Appearance and Fusion of Ossification Centers as Observed by Roentgenographic Methods. H. Flecker, Cairns, North Queensland, Australia.—p. 97.

Irradiation Pulmonary Fibrosis.—Widmann made a clinical and roentgenologic study of chests of *273* patients who had received irradiation to the chest for cancer. Pulmonary fibrosis with atelectasis was a permanent change and appeared in varying degree within two to twelve months after irradiation with an intensity of 1,600 to 2,000 roentgens in one cycle and with doses of 3,000 to 6,000 roentgens in two or more cycles to each of three or four cutaneous ports. Of the *273* patients, 62 showed roentgen evidence of fibrosis, and 53 of them had metastatic complications as revealed clinically, roentgenographically and/or at necropsy. Identical procedures of irradiation caused pulmonary fibrosis in only 9 patients who were clinically free from cancer from three to ten years. This is the approximate incidence of irradiation fibrosis for so-called normal lungs. Roentgen determination of irradiation fibrosis complicating and accentuating metastatic cancer or other possible pathologic factors (infection, arteriosclerosis and advancing age) are fraught with many complexities and inconsistencies; so interpretations and conclusions may be controversial. Standards of evaluation are only approximate estimations.

Carcinoma of Lower Lip.—Howes and La Rosa report *74* cases of cancer of the lower lip treated at the Brooklyn Cancer Institute between 1930 and 1940. Only 1 patient was a woman. The youngest patient was 32, and the oldest had passed his eighty-sixth year; the average age for the series was 62. Treatment for 59 of the patients had a satisfactory result, and that of 15 was a failure. The result was deemed satisfactory if after six months there was no evidence of extension. Three patients have died of intercurrent disease—heart disease, tuberculosis and the like—but with no evidence of recurrence or spread of the carcinoma. The result was considered a failure if local or metastatic spread of the cancer occurred. Of the other 8 patients who died in the (failure) series it is known that further extension to the submental or the submaxillary region of the cervical lymphatics developed before death. Many of these had carcinoma and osteomyelitis in the mandible. Surgical intervention and radium or roentgen therapy to the local lesion were equally efficient in producing a cure. If the local lesion is controlled, block dissection of the cervical lymphatics offers the greatest hope of cure.

Irradiation Sickness.—The various remedies that Steinberg used for alleviating irradiation sickness included slow irradiation technic, administration of liver extract or of vitamin B_1, screening and high sodium chloride intake. An analysis of 103 consecutive instances of irradiation sickness, based on the development of lassitude (for which 15 per cent is subtracted from the effectiveness of the drug or physical means), nausea (15 per cent subtracted), anorexia (15 per cent), vomiting (25 per cent) and exhaustion (30 per cent), shows that the slow technic (200 roentgens or less being given daily) was 82 per cent effective, therapy with sodium chloride (10 Gm. daily) 77 per cent, oral administration of liver extract 70 per cent, intramuscular administration of liver extract 51 per cent, vitamin B_1 therapy 44 per cent and screening had no effect. None of the methods appear specific; most of them are beneficial either through improvement of the general condition of the patient or through the psychic effect resulting from the added attention that the patient receives. In the recommendation of drugs or any other means for combating irradiation sickness one should take into consideration the condition of the patient, the area or site to be irradiated, the size of the ports, the number of roentgens given daily, the ratio of the scheduled to the total dose and the fact that irradiation sickness does not develop in many cases even though large daily and total doses are given.

Surveys of Chest.—Richards states that the roentgen examination of recruits for military service not only excludes carriers of the tubercle bacillus but obviates the breakdown of enlisted men in whom pulmonary lesions are unsuspected and protects the country from enormous hospitalization and pension expense. In Canada the 14 by 17 inch (35.5 by 43 cm.) film was accepted largely because of its almost universal availability. At first civilian roentgenologists donated their services, to whom $2 was paid for the film, its development and the filing envelop. In Ontario it has been calculated that the approximate cost to find each case of tuberculosis was $500. After that it costs the province approximately $1,000 to treat each patient with minimal, $3,000 for each with moderately advanced and $5,000 for each with advanced tuberculosis. But in the case of a soldier in whom tuberculosis develops the expense is $25,000. This includes his hospitalization, as for the civilian, his life pension and usually a living allowance for his wife and family. The author believes that nontuberculous pulmonary infection has received far too little attention. In the army nontuberculous infection can be as crippling as tuberculosis, and the hospitalization and pension cost is four to six times that for tuberculosis. Figures from the director general's office indicate that during the recruitment of 328,325 men the single 14 by 17 inch roentgenogram was responsible for the rejection of 5,273; 3,076 had tuberculous and 1,088 nontuberculous pulmonary disease, and the rest had cardiac or other conditions. There were eleven "personal" errors due to interpretation, and sixteen other errors were inherent in the method and unavoidable. Even if other errors are discovered later the single 14 by 17 inch roentgenogram has proved extremely accurate, and it is amply justified on economic grounds. Guided by the statistics of the last war, the investment of some $600,000 for the roentgen survey has

resulted in a saving to the country of more than $20,000,000. In one unit of 800 men, of which the author has knowledge, 20 had open tuberculosis. The roentgen examination of these men cost the country $1,600 and might be said to have saved $80,000 to $100,000. The potential saving is far greater when the possibility of the infection of others is considered. Up to the end of May 1941, 895 men were discharged from the Canadian army because of pulmonary tuberculosis. Most of them were recruited before a roentgen survey of the chest was done as a routine.

American Review of Tuberculosis, New York

45:1-116 (Jan.) 1942

*Fluoroscopy in Diagnosis of Pulmonary Tuberculosis. L. H. Garland, San Francisco.—p. 1.
*Roentgenoscopy of Lungs: Its Adequacy as Determined by Spot Roentgenography. R. H. Stiehm, Madison, Wis.—p. 15.
Tuberculosis Control Program in Mexico. D. G. Alarcón, Mexico, D. F., Mexico.—p. 36.
Tuberculosis Control Among North American Indians. J. G. Townsend, Washington, D. C.; J. D. Aronson, Philadelphia; R. Saylor and Irma Parr.—p. 41.
Tuberculosis in the Negro. V. F. Cullen, Frederick, Md., and R. Hoffman, Henryton, Md.—p. 53.
*Mortality from Tuberculosis Among Race Stocks in the Southwest. L. I. Dublin, New York.—p. 61.
Solitary Foci of Tuberculosis: Their Development and Progress—Assmann Foci, Caseous Nodular Tuberculosis and Tuberculomas. P. H. Pierson, San Francisco.—p. 75.

Fluoroscopy.—Garland states that even the published data of ardent protagonists of fluoroscopy show that the relative accuracy of the method in diagnosing tuberculosis is much lower than is indicated by the conclusions of these authors. Physical, psychologic and personal factors make fluoroscopy not sufficiently accurate for detecting active tuberculous lesions. The method is much more accurate than simple physical examination and is of definite value for detecting extensive or moderately advanced disease, especially when cavities are present. The percentage error of even expert fluoroscopy as compared to roentgenography varies from 13 to 35 per cent. Fluoroscopy in selected cases is essentially an adjunct to complete roentgen examination.

Roentgenoscopy of Lungs.—Stiehm presents cases which illustrate the advantages of roentgenoscopy: the proper position, the viewing of the lungs in several positions, which may disclose lesions at the periphery of the lung and those hidden by bones or other structures, and the advantage of magnifying a small lesion. The limitations of even the 14 by 17 inch stereoscopic film are revealed by roentgenoscopy. The tendency for relying on the posteroanterior roentgenogram, whether the miniature or the 14 by 17 inch, should be viewed with more caution and less enthusiasm. The miniature photograph is perhaps economically justifiable, but its limitations must be widely appreciated, especially if the small infiltrating lesion is to be found. Enlargement of the image, by magnification by roentgenoscopy and spot roentgenography, rather than its reduction appears more tenable. It is unfortunate that a tendency has developed to omit the tuberculin test, the earliest indication of tubercle formation, when mass roentgen surveys are made. Tuberculin tests should be repeated at yearly or more frequent intervals on all persons who react negatively to the test. With this routine the approximate time at which the infection occurred is known. The low cost of miniature films does not make the tuberculin test less valuable. It is not good medical practice to carry out mass roentgen ray surveys without knowing which persons are infected. The attempt to designate by a study of the roentgenogram which lesions typify significant pulmonary tuberculosis and/or arrested disease is hazardous and unfortunate and leads to errors of diagnosis. The minuteness of a tuberculous lesion does not indicate benignity. A study which includes history, physical examination and roentgenographic and laboratory data should not be considered complete unless the fasting patient's gastric contents are aspirated on three successive mornings and guinea pigs are inoculated. The presence of tubercle bacilli as determined by guinea pig inoculation indicates, with few exceptions, that the lesion seen in the roentgenogram is tuberculous and pathologically active.

Tuberculosis in the Southwest.—Dublin discusses the mortality in the racial groups (Negro, Mexican, Indian, Chinese, Japanese and Filipino) in the Southwest. In Louisiana the death rate from tuberculosis among Negroes for 1937 to 1939 was 102.5 per hundred thousand, in Texas 92.2 and in California 201.9, as compared to 38, 50.5 and less than 50, respectively, for the white population. The problem of tuberculosis among Mexicans is largely concentrated in Texas, New Mexico, Arizona and California. Data furnished by Texas authorities show that in 1937 to 1939 the death rate from tuberculosis in the Mexican population was 117.9. Data on the Spanish-American population in New Mexico are most unsatisfactory, for the certification of the cause of death is not efficient and in approximately 20 per cent of cases the cause of death is not stated or is ill defined. Werner found that deaths from tuberculosis among Mexicans in New Mexico accounted for more than two thirds of the total deaths in the state from this cause. In Arizona the death rate among Mexicans for 1937 to 1939, as reported by the state officials, was 145.8. In California the rate reported by the state officials was 199.9. The Indian population of Arizona, New Mexico and California is approximately 100,000, or 30 per cent of the total Indian population of the country. Arizona reports a death rate from tuberculosis among Indians of 280.5, New Mexico a rate of 200 and California a rate of 237.6. The death rate from tuberculosis among the Indians of Oklahoma, who make up about 30 per cent of the total Indian population of the country, for 1937 to 1939 was 154. The Japanese comprise nearly two thirds of the 200,000 persons of Oriental origin in California. The death rate from tuberculosis for the Japanese for 1937 to 1939 was 83.8, for the Chinese it was 179.8 and for the Filipinos it was 223.6 per hundred thousand. No permanent solution of the tuberculosis problem in the Southwest may be expected until the economic condition of the racial groups mentioned is improved and the diagnostic and curative facilities are expanded.

Annals of Surgery, Philadelphia

115:1-160 (Jan.) 1942

Primary, Solitary Lymphoid Tumors of Gastrointestinal Tract. S. Warren and C. R. Lulenski, Boston.—p. 1.
Rupture of Colon by Compressed Air: Report of Three Cases. R. K. Brown, Buffalo, and J. H. Dwinelle, Auburn, N. Y.—p. 13.
*Congenital Malformations of Appendix—Familial Disease. T. M. Downs, Bryn Mawr, Pa.—p. 21.
Obstructive Jaundice Due to Carcinoma of Pancreas: Choice of Operative Procedure. M. A. Sulliek and J. H. Garlock, New York.—p. 25.
Ileus Following Fractured Ribs. W. A. Altemeier, Cincinnati, and G. H. Wadsworth, Detroit.—p. 32.
Effect of Sulfonamides on Prevention of Experimental Brain Abscess. G. M. Markley, Philadelphia.—p. 39.
*Relation of Hyperthyroidism to Hypertension. J. D. Bisgard, Omaha.—p. 42.
Metastatic Tumors in Breast. H. Charache, Brooklyn.—p. 47.
Neoplasms of Bony Thoracic Wall. G. N. J. Sommer Jr., Trenton, N. J., and R. C. Major, Atlanta, Ga.—p. 51.
*Autoplastic Transplantation of Splenic Tissue, in Man, Following Traumatic Rupture of Spleen. R. A. Hamrick, Birmingham, Ala., and J. D. Bush, University, Ala.—p. 84.
*Unusual Case of Benign Multiple Chorionic Villi Implants in Peritoneal Cavity Accompanied by Hemoperitoneum. J. A. Lazarus and A. Schifrin, New York.—p. 93.
*Krukenberg's Tumors: Survey of Forty-Four Cases. J. M. Leffel Jr., J. C. Masson and M. B. Docherty, Rochester, Minn.—p. 102.
Desmoid Tumors: Clinical and Pathologic Study. R. O. Pearman and C. W. Mayo, Rochester, Minn.—p. 114.
Technic of Tattooing with Mercury Sulfide for Pruritus Ani. R. Turell, New York, and A. W. M. Marino, Brooklyn.—p. 126.
Varicose Veins: Analysis of Results of Various Operative Procedures. S. W. Moore and G. M. Knapp, New York.—p. 131.
Problem of Catgut Sensitivity and Its Relation to Wound Healing: Preliminary Report. H. T. Langston, Chicago.—p. 141.
Role of Liver in Preoperative Care. J. H. Mulholland, New York.—p. 148.
Advantages of Combining Local Infiltration Anesthesia with Controlled Fractional Spinal Anesthesia in Substandard Surgical Risks. J. Rhoads and W. E. Lee, Philadelphia.—p. 156.

Familial Malformation of Appendix.—Downs reviewed histories of a family of 22 persons, descendants of 1 man to the third generation, on 16 of whom appendectomy had been performed. The same deformity has been observed in the excised appendix of each person. The family studied consists of a father, his 6 children and 15 grandchildren. The father, 4 of his 6 children and 11 of the grandchildren have been operated on. The operations were performed in various hospitals. The record

of each mentions a band of fibrous tissue at the base of the appendix with adhesion of the organ to the outer surface of the cecum. Strikingly good results followed the removal of the mechanically crippled appendix. The peritoneal bands may be inherited. The earliest symptoms of indigestion, abdominal pain, tenderness at McBurney's point and colic are probably due to a deranged intestinal function, such as pylorospasm or spastic colon, without organic changes in the appendical wall. The malformation alone is not sufficient to precipitate an attack of acute appendicitis. It may act as a predisposing cause, but some other etiologic factor must be present.

Hyperthyroidism and Hypertension.—Bisgard studied the blood pressure of 48 of 99 patients one year or more after a subtotal thyroidectomy, 32 of whom at the time of operation had a resting systolic pressure between 145 and 170 and the other 16 a pressure of 170 or more. The pressure of 19 of the first group one year or more after the operation was reduced considerably; the systolic pressure of 11 of these 19 was normal. The diastolic pressure of 17 and the systolic pressure of 5 decreased, and in 10 the diastolic pressure increased. In 2 there was no change in pressure. In 8 of the second group, both the systolic and the diastolic pressure after thyroidectomy were reduced and remained so for one to five years. In 4 of these the pressure was nearly normal. In 4 of the 8 remaining patients the pressure was increased, in 2 it remained the same and in 2 the decrease was extreme. From these data two types of cases are distinguishable: (1) a type in which hyperthyroidism and established hypertension coexist as unrelated entities and (2) a type in which the relief of the hyperthyroidism by subtotal thyroidectomy causes the systolic and the diastolic pressure to become much lower, normal or nearly normal. The relation of hyperthyroidism to hypertension in the second type of case is probably provocative; the hyperthyroidism merely precipitates or exaggerates the latent hypertension. In both types arteriolar disease, differing only in degree, is present. In the first type the arteriolar disease is more advanced and renders the vascular bed inadequate for even a normal volume of blood flow, and in the second type the hypertension is pretensive and in time progresses to the condition of the first type.

Autoplastic Splenic Implants.—Hamrick and Bush report the development of nodular splenic implants throughout the peritoneal cavity in a Negro boy of 9 after traumatic rupture of the spleen. The boy had fallen out of a tree and had struck his abdomen on the ground. This is the thirteenth case of similar nature described in medical literature. It is the author's opinion that in man the relative youthfulness of the splenic tissue is of prime importance in making the splenic pulp cells viable for autoplastic implantation and successful peritoneal grafting. Autoplastic transplantation of splenic tissue may not be the exception in persons who have survived trauma to the spleen incurred in their youth.

Chorionic Villi Implants.—Lazarus and Schifrin cite the case of a woman of 25 who two years before admission had gone through an apparently normal pregnancy but had given birth to a dead fetus. Three months prior to her present illness she was free of abnormal symptoms, when vague abdominal pain ensued. Slightly less than four weeks before operation she was curetted for a supposed intrauterine pregnancy, having missed one menstruation. The abdominal pain became acute only twenty-four hours before operation. Operation revealed much blood and many clots in the peritoneal cavity. The tubes and ovaries, particularly the right, were studded with small nodules but presented no rent indicative of ectopic rupture. A section of omentum studied microscopically disclosed the tumors to be typical chorionic villi, different from chorioepithelioma. The benignity of the lesion was suggested by the fact that four Aschheim-Zondek tests gave negative results. Photomicrographs of the tumor disclose well differentiated villi which are not commonly present in chorioepithelioma but which characterize normal chorionic tissue. Furthermore, the cells were typical Langhans' syncytial cells. Also there was little evidence of invasion of the blood spaces by chorionic tissue, which is frequent in the malignant type of tumor. Study of the literature has failed to reveal a similar instance.

Krukenberg's Tumor.—From a review of the surgical, necropsy and clinical data on 44 patients with Krukenberg's tumor encountered at the Mayo Clinic from 1908 to 1938, Leffel and his colleagues conclude that the term should not be used. Since, however, this is likely to be employed, they suggest that all metastatic adenocarcinomas of the ovary be included under it. These tumors vary only in size and degree or malignant grade. Nearly all Krukenberg tumors will show some glandular structure if serial sections are made. The authors have always found mucus, evidenced by the presence of "signet ring" cells. The variation in glandular structure and mucus is largely dependent on the grade of the primary lesion. Metastasis may occur by spread through peritoneal lymphatic channels, by the retroperitoneal lymphatics, by infiltration of contiguous structures or by a process of peritoneal sedimentation. The predominant type of spread depends on the site of the primary lesion, the depth to which the wall of the primarily involved viscus has been invaded and the degree or grade of the primary lesion. Primary adeno-"colloid" carcinoma of the ovary rarely mimics Krukenberg's tumor. The stromal reaction seen in an ovary being invaded by carcinoma is comparatively typical. As for carcinoma elsewhere in the body, operation for a Krukenberg tumor perhaps offers more than does any other type of treatment. Although the surgeon is confronted with a hopeless situation, he must realize the value of palliation.

Archives of Dermatology and Syphilology, Chicago

45:1-258 (Jan.) 1942

*Hereditary Xanthomatosis: Familial Incidence of Xanthoma Tuberosum Associated with Hypercholesteremia and Cardiovascular Involvement, with Report of Several Cases of Sudden Death. D. Bloom, New York; S. R. Kaufman and R. A. Stevens, Wilkes-Barre, Pa.—p. 1.
Chromoblastomycosis in Cuba. V. Pardo-Castello, Havana, Cuba; E. R. Leon, Santa Clara, Cuba, and F. Trespalacios, Havana, Cuba.—p. 19.
Lupus Erythematosus Hypertrophicus et Profundus. P. E. Bechet, New York.—p. 33.
Necrobiosis Lipoidica and Granuloma Annulare: Comparative Study. F. A. Ellis, Baltimore, and H. Kirby-Smith, Washington, D. C.—p. 40.
Bacterial Flora of Normal Skin: Report on Effect on Various Ointments and Solutions, with Comments on Clinical Significance of This Study. D. M. Pillsbury, C. S. Livingood and Anna C. Nichols, Philadelphia.—p. 61.
Differential Diagnosis of Parapsoriasis. L. McCarthy, Washington, D. C.—p. 81.
Histochemical Observations on Melanin Production in Skin. H. Sharlit, in collaboration with W. Sachs, C. F. Sims and Bella H. Salzer, New York.—p. 103.
Comparison of Frei Antigens. H. M. Robinson and H. M. Robinson Jr., Baltimore.—p. 112.
*Estrogen Therapy of Tinea Capitis: Preliminary Report. D. O. Poth and S. R. Kaliski, San Antonio, Texas.—p. 121.
Dyskeratoid Dermatosis. S. B. Frank and C. R. Rein, New York.—p. 129.

Hereditary Xanthomatosis.—Bloom and his co-workers discuss hereditary xanthomatosis as it occurred in 9 children of Syrian descent whose parents were second cousins. There had been 13 children; 4 are excluded from the survey, as 1 of them was still an infant and 3 had died at birth or shortly after. In 5 of the 9 remaining children xanthoma tuberosum developed before the age of 4. Of these 4 died more or less suddenly at the ages of 6½, 14, 18 and 23 years, respectively. The 1 surviving boy with xanthoma tuberosum has a cardiac defect and hypercholesteremia. Of the 4 living children without cutaneous xanthoma a girl aged 8 years has heart disease and hypercholesteremia, a boy of 4½ has hypercholesteremia without any cutaneous or cardiac involvement and 2 children are apparently free of any abnormality. The parents of these tainted siblings had no cutaneous or cardiovascular symptoms, although the father had hypercholesteremia. The mother had 8 half siblings, and 5 of them also had hypercholesteremia. This appears to support the theory that hypercholesteremia rather than xanthoma tuberosum is the principal directly inherited factor and that this disturbance of lipid metabolism under certain conditions leads to cutaneous and cardiovascular changes. The hereditary cause of the disorder has been demonstrated but no adequate statistical data are available that warrant a final analysis of the genetic mechnism involved. The taint distribution agrees with the theory of dominant inheritance, but it also can be explained by simple recessiveness. Genetic studies of affected families are essential for the development of successful therapeutic and preventive measures. A cholesterol-

free and fat-free diet may be helpful in protecting carriers of the hypercholesteremic trait against the development of cutaneous and cardiovascular lesions.

Estrogen for Tinea Capitis.—Poth and Kaliski successfully treated 18 boys and 12 girls having tinea capitis with diethylstilbestrol and theelin. There was no significant difference in the healing time and tolerance for the two preparations. The mechanism of the actior of the estrogens is not known. It may be due to the temporary production of adult cells. This might explain the tendency for the spontaneous cure of tinea capitis at puberty. If estrogen causes changes in the scalp which increase its local resistance, its effectiveness might be increased by the concerted use of fungicides.

Archives of Ophthalmology, Chicago

27:1-230 (Jan.) 1942

Ocular Signs of Intracranial Saccular Aneurysms: Experimental Work on Collateral Circulation Through Ophthalmic Artery. F. B. Walsh and A. B. King, Baltimore.—p. 1.
Corneal Penetration of Sulfanilamide and Some of Its Derivatives. H. Chinn and J. G. Bellows, Chicago.—p. 34.
Treatment of Retinoblastoma (Retinal Glioma) Surgically and by Irradiation. H. Martin and A. B. Reese, New York.—p. 40.
Studies of Retina in Bulk: Some Observations on Unstained Human Retina. A. Lorwenstein, Glasgow, Scotland.—p. 73.
Epidemiology of Inclusion Conjunctivitis. P. Thygeson and W. Stone Jr., New York.—p. 91.
Choroidosis Centralis Serosa: Diagnosis, Pathologic Physiology and Therapy. W. F. Duggan, Utica, N. Y.—p. 123.
*Hereditary Glaucoma in Pedigree of Three Generations. T. D. Allen and W. G. Ackerman, Chicago.—p. 139.
Operative Treatment of Congenital Subluxation of Lens. A. Knapp, New York.—p. 158.
Etiology of Dacryocystitis and Epiphora. S. W. Garfin, Boston.—p. 167.

Hereditary Glaucoma.—Allen and Ackerman report 7 instances of hereditary glaucoma observed among 15 members of a family in which consanguine persons had not married and which was traced through three generations. The average age at which the glaucoma ensued was 11.6 years. The disorder was of the chronic simple type. Two of the 4 patients whose error of refraction could be determined had myopia; in 1 this was of more than 5 diopters in each eye, and in the other 1 the myopia varied from 1 to 5 diopters in the right eye. Miotics were insufficient; the best results were obtained with medical and surgical therapy. Early operation, goniotomy, before extensive visual damage occurs is important. Peripheral anterior synechias are unlikely unless considerable hemorrhage follows the operation. In the authors' cases goniotomy was effective without repetition in four eyes and apparently effective with one repetition in three eyes, and in one eye five goniotomies, two cyclodialyses and one deep root iridectomy were ineffective but iridencleisis was successful.

Archives of Otolaryngology, Chicago

35:1-182 (Jan.) 1942

Diagnosis and Treatment of Cancer of Larynx, with Statistical Review of Fifteen Cases. A. E. Hammond, Detroit.—p. 1.
Carotid Artery Surgery. R. W. Kerwin, Chicago.—p. 30.
*Otitic Bacterial Meningitis. S. Weinstein, Brooklyn.—p. 53.
Sphenopalatine Ganglion Neuralgia. W. W. Eagle, Durham, N. C. —p. 66.
Malignant Melanoma of Nose. I. I. Kaplan, New York.—p. 85.
*Relation of Tonsillectomy to Poliomyelitis. E. M. Seydell, Wichita, Kan.—p. 91.
*Aerosinusitis. P. A. Campbell, Randolph Field, Texas.—p. 107.
Purulent Otitis Media, Mastoiditis, Sinus Thrombosis and Suppuration of Petrous Pyramid. S. J. Kopetzky, New York.—p. 115.

Otitic Bacterial Meningitis.—Weinstein discusses 39 cases of otitic bacterial meningitis with bacteria demonstrable in the spinal fluid encountered at the Jewish Hospital in the four years before the introduction of chemotherapy and in the four years afterward. The meningitis was usually associated with acute otitis, and generally the right side was involved. The otitis was acute in 34 and chronic in 5. The organisms most commonly isolated were streptococci and pneumococci. During the four years prior to 1937, 27 patients were encountered and not 1 recovered, but 4 of the 12 patients treated since 1937 have recovered. Modern chemotherapy for bacterial meningitis is one of the major achievements in its treatment, making the outlook for the future brighter.

Tonsillectomy and Poliomyelitis.—Seydell studied the relation of tonsillectomy to the development of poliomyelitis (bulbar) as afforded by a survey of literature and various public health statistics. Definite conclusions cannot be drawn, as the data studied either support or oppose the theory that persons tonsillectomized during an epidemic of poliomyelitis are more prone to the disease or suggest that those whose tonsils have been removed are more susceptible to poliomyelitis irrespective of the time of the operation. The available statistics show that the bulbar form of the disease in 48 and the spinal form in 25 patients followed a recent tonsillectomy. The relationship of tonsillectomy to poliomyelitis cannot be determined without further study. Definite plans for the investigation of all epidemics of poliomyelitis should be formulated by trained epidemiologists, and an investigator should be appointed for each state. After an epidemic, statistics would thus become available through the various state boards of health.

Aerosinusitis.—Campbell states that in certain situations the paranasal sinuses are affected by changes in barometric pressure produced by changes in elevation and in weather. Normal paranasal sinuses surrounded by normal tissues are unaffected by these variations, but the presence of fluid in the sinuses or of redundant tissue in contact with the ostium of a sinus creates mechanical conditions which may lead to pathologic changes and symptoms. The term aerosinusitis is suggested for the condition.

Michigan State Medical Society Journal, Muskegon

41:1-84 (Jan.) 1942

Choice of Anesthesia in Emergency Surgery. W. Bourne, Montreal, Canada.—p. 35.
Modification of Open Mask for Administration of Vinethene Anesthesia. C. Odén, Muskegon.—p. 39.
Coarctation of Aorta: Case with Right Axis Deviation of Electrocardiogram and Auricular Fibrillation, with Some Statistics. H. Stalker, Detroit.—p. 40.
The Physician in National Defense. R. A. Bier, Washington, D. C. —p. 43.
Dangers in Breech Delivery. W. F. Seeley and R. S. Siddall, Detroit. —p. 49.
A Psychiatrist Looks at Education. L. A. Schwartz, Detroit.—p. 52.
Chemotherapy in Acute Hematogenous Osteomyelitis: Case Report. B. J. Fieldhouse, Ida.—p. 56.

New England Journal of Medicine, Boston

226:995-1034 (Dec. 25) 1941

Cardiovascular Examination of the Army Recruit. H. Jackson Jr., Boston.—p. 995.
New Physical Standards for Army Pilots. E. T. Spunt, Boston.—p. 999.
*Arterial Occlusion in Relation to Effort, with Special Reference to Retinal Arteries. H. B. Sprague and W. Westinghouse, Boston.—p. 1002.
Tuberculin Tests in Children: Interpretation of Series of Varying Intradermal Test Doses and of Comparable Series of Patch Tests. C. A. Smith, W. H. Faulkner and J. M. Cordi, Boston.—p. 1008.
*Encephalitides of Virus Etiology. J. H. Dingle, Boston.—p. 1014.

Arterial Occlusion and Effort.—Sprague and Westinghouse determined the exact effort that 75 patients in presumably good health were undergoing at the time of their arterial occlusion; 29 patients (with thirty attacks) had ocular symptoms and 46 (with forty-seven occlusions) did not have symptoms referable to the eye. The retinal picture of arterial blocking is that of ischemia, often with the characteristic cherry red spot at the macula. Although embolism of the central artery of the retina is a popular diagnosis, such embolism is relatively rare; obliterating endarteritis with thrombosis is the common cause. Fifteen of the 29 patients with occlusion of the retinal artery or its branches had rheumatic heart disease. Loss of sight of the right eye in 10 and of the left in 4 was sudden. In 1 the right retinal artery was occluded first and then the left. Only 2 of the patients were undergoing unusual physical effort when overtaken by blindness, 6 were engaged in mild exercise and 7 were at complete rest. There were 9 instances of hypertension and arteriosclerosis. The right eye of 5 and the left eye of 4 were involved. Two patients were doing housework, 1 stepped back from a slight furnace explosion, 1 was bending forward working on an automobile, 2 were dressing, 1 awoke with loss of vision, 1 was at the movies and 1 noticed loss of vision after turning his head quickly. Two of the remaining 5 patients had syphilis (both had a normal cardiac rhythm), and in 3 no cardiovascular disease was observed. One of the 2 patients with syphilis was ironing and 1 was walking about the house at the time of occlusion, 2 of the

others were at rest and 1 was walking. Of the 46 patients in whom the occlusion was not in the vessels of the eye 22 had rheumatic heart disease, and in none of them did the embolism occur during violent effort. In 2 it happened some time after unusual effort: in 1 fifteen minutes after running for a trolley and in 1 after the patient had fixed a bed. In 9 others it occurred during mild effort (rising in the morning, driving a car, eating breakfast, playing golf and working as a baker) and in 11 during complete rest. Arteriosclerosis and/or hypertension was present in 23 patients, and 1 patient had no demonstrable cardiovascular disease. None of these patients were engaged in severe or unusual effort: in fact, 12 were at complete rest. It is seen that the sudden loss of sight or of the use of a limb or occlusion of cerebral or mesenteric vessels based on embolism or other arterial blockage occurred during ordinary daytime activities or when the patient was at rest in more than 9 of 10 patients. Unusual effort apparently is not the cause of arterial occlusion. Arterial blockage is as progressive when the patient is at rest as when he is active, perhaps more so.

Encephalitides.—Dingle states that the largest epidemic of encephalitis, affecting approximately 3,000 persons, of known origin occurred during the past summer and fall in an area encompassing the North Central states and Canadian provinces. In the outbreaks of von Economo's disease of unknown origin since 1916 three distinct viruses have been demonstrated. This has helped to clarify the problem of encephalitis. Only two types of virus encephalitis, St. Louis encephalitis and equine encephalomyelitis, other than poliomyelitis, have occurred in significant epidemics in this country. For only poliomyelitis and Australian X disease is evidence of potential animal reservoirs lacking, and vector transmission is possible for at least five of the viruses causing encephalitis in man. The acute encephalitides of virus origin that occur in epidemic form are so similar in their clinical aspects that differentiation on this basis is not possible except in poliomyelitis. The final etiologic diagnosis must be made with the aid of laboratory procedures. Treatment of all the encephalitides is at present chiefly symptomatic. The sulfonamide derivatives, specific antiserum, convalescent human serum, antistreptococcus serum and streptococcus vaccines have been tried for therapy and/or prophylaxis. In this country there are three methods of preventing epidemics of encephalitis: extermination of host reservoirs, extermination of vectors and immunization of susceptible hosts. The use of purified immune vaccine seems desirable for laboratory workers and for persons in areas where equine encephalomyelitis is endemic whose occupation offers frequent opportunity for infection with the virus. Vaccines that can be used safely in man are not yet available. Further investigation of the problems of prevention is essential, especially because of the military activities and concentration of men in training camps in areas where the disease is endemic.

North Carolina Medical Journal, Winston-Salem

2:635-690 (Dec.) 1941

How Can I Prepare My Child for the Future? J. A. Shaw, Fayetteville.—p. 635.
Acute Glomerulonephritis, with Special Reference to Treatment. W. R. Stanford, Durham.—p. 637.
*Care of Patients with Incurable Cancer of Cervix. J. P. Rousseau, Winston-Salem.—p. 644.
Management of Congestive Heart Failure. W. T. Rainey, Fayetteville.—p. 645.
True Hyperinsulinism Due to Diffuse Hyperplasia of Islet Tissue: Report of Case Cured by Subtotal Pancreatectomy. A. deT. Valk and E. A. MacMillan, Winston-Salem.—p. 648.
Chemotherapy in Obstetrics and Gynecology. C. N. Burton, Asheville.—p. 652.
Aspiration of Lipiodol Injected for Diagnosis and Localization of Ruptured Intervertebral Disks. B. Woodhall, Durham.—p. 655.
Is Diverticulitis of Colon a Surgical Disease? W. R. Johnson, Asheville.—p. 657.
Rheumatic Fever. E. M. Carr, Asheville.—p. 661.
Evaluation of Routine Proctosigmoidoscopy in Gastrointestinal Study: Report on 379 Examinations. A. X. Rossien, Kew Gardens, N. Y.—p. 666.

Care of Patients with Incurable Cancer of Cervix.—Rousseau recommends the following twelve measures for relieving the pain of incurable cervical cancer: 1. The incurability and hopelessness of the disease should be appraised correctly. 2. Ureteral obstruction, anuria and uremia should be prevented. 3. Pyometra should be prevented by gentle dilation of the cervix and lavage of the uterine cavity. 4. If a parametric abscess exists, colpotomy is indicated. 5. The urinary symptoms incident to involvement of the wall of the bladder and associated cystitis should be relieved. 6. High voltage roentgen therapy is necessary for painful osseous metastasis. 7. When sedation becomes necessary acetylsalicylic acid, then codeine, cobra venom and finally morphine should be used. 8. Alcohol should be injected into the spinal subarachnoid space if sedation fails to give relief. 9. Treatment with a liquid diet and tincture of opium should be tried for proctitis, diarrhea and rectal tenesmus. 10. For the relief of the toxemia of severe infections, chills and fever the sulfonamides, blood transfusion, intravenous injections of fluid and frequent hot boric acid douches are helpful. 11. A vaginal tamponade with gauze soaked in liquid petrolatum will control severe hemorrages. 12. For the ileus of the late stages of the disease a low residue diet, liquid petrolatum and enemas are indicated.

Northwest Medicine, Seattle

41:1-38 (Jan.) 1942

Nature of Allergy: Its Pathology and Mechanisms of Symptom Production. M. B. Cohen, Cleveland.—p. 3.
Clinical Physiology of Shock. K. E. Hynes, Seattle.—p. 7.
Organic Occlusive Peripheral Vascular Diseases: Diagnosis and Treatment. R. J. Popkin, McChord Field, Wash.—p. 10.
Pulmonary Emboli: Report of Fatal Medical Case. J. M. Bowers, Seattle.—p. 14.
Medical Aspects of Industrial Poisons. H. M. F. Behneman, San Francisco.—p. 20.
Compound Fractures. H. C. Blair, Portland, Ore.—p. 23.
Differential Diagnosis Between Hyperthyroidism and Neurosis. F. Lemere and B. T. King, Seattle.—p. 26.
Pseudomucinous Cystadenoma with Malignant Changes. R. S. Mitchell, Wenatchee, Wash.—p. 27.

Pennsylvania Medical Journal, Harrisburg

45:321-416 (Jan.) 1942

Changing Conceptions of Portal Cirrhosis. A. M. Snell, Rochester, Minn.—p. 337.
Early Recognition of Deafness: Pennsylvania Plan for the Hard of Hearing School Child. L. T. Buckman, Wilkes-Barre.—p. 345.
Report of Experiment in Control of Cancer of Uterus. Catharine Macfarlane, Margaret C. Sturgis and Faith S. Fetterman, Philadelphia.—p. 348.
Sedatives—Their Use and Abuse. E. B. Edie, Uniontown.—p. 351.
Treatment of Acute Otitis Media in Children. J. W. Hershberger, Martinsburg.—p. 355.
*Acute Appendicitis in Children. J. M. Deaver, Philadelphia.—p. 358.
*Male Hormone Therapy. C. W. Dunn, Philadelphia.—p. 362.

Acute Appendicitis in Children.—Deaver presents a study of 417 consecutive cases of acute (perforated, nonperforated and perforated with abscess or with peritonitis) appendicitis in children up to 14 years of age who were admitted between 1930 and August 1941 to the Children's Hospital of the Mary J. Drexel Home. Analysis of the data reveals that there was a steady decrease in mortality (11 of the 119 children with a perforated appendix died) during the period of the study. There were no deaths among the 298 children whose appendix was not perforated. The decreased mortality is attributed to proper preoperative care, increased use of the McBurney incision and intelligent postoperative care, which stressed proper fluid-electrolyte administration and duodenal suction. Sulfanilamide has been used for the last two years; 1 to 2 Gm. was placed in the peritoneal cavity and 1 to 2 Gm. in the wound. The dose depended on the amount of contamination, the size of the incision and the size and age of the child. When drainage was employed, sulfanilamide was administered by hypodermocylsis for the first three days. The drug has not been harmful. Its intraperitoneal use may be beneficial for early peritonitis. Its use in the wound has cut down minor complications of the wound when drainage was not used and permitted incisions to be closed more tightly when drains were used.

Androgen Therapy.—Dunn reviews the use of androgen therapy for the young hypogonadal male, the climacteric male and the impotent male. The most effective and practical method of administering testosterone for genital hypoplasia is by implantation in the adult male, and by oral or hypodermic administration for the puberal or the adolescent male. Patients given an adequate amount of testosterone exhibit definite

primary and secondary sex characteristics and favorable constitutional effects. Testosterone stimulates and sometimes accelerates growth. The least favorable results are obtained when impotence develops after diabetes or testicular atrophy. It is possible to induce testicular development when 200 to 300 mg. of testosterone is implanted at intervals of four to six months. The administration of testosterone to patients with diabetes resulted in a diminished requirement of insulin.

Physiological Reviews, Baltimore

22:1-124 (Jan.) 1942

Insensible Loss of Water. L. H. Newburgh and Margaret Woodwell Johnston, Ann Arbor, Mich.—p. 1.
Hemoglobinuria. C. L. Yuile, Rochester, N. Y.—p. 19.
Fuel for Muscular Exercise. C. L. Gemmill, Baltimore.—p. 32.
Recent Advances in Knowledge of Liver. C. D. Snyder, Baltimore. —p. 54.
Present Status of Shock Problem. C. J. Wiggers, Cleveland.—p. 74.

Psychiatric Quarterly, Utica, N. Y.

16:1-218 (Jan.) 1942

Rorschach Method and Its Uses in Military Psychiatry. J. A. Brussel and K. S. Hitch, Fort Dix, N. J.—p. 3.
Comparative Table of Main Rorschach Symbols. Z. A. Piotrowski, New York.—p. 30.
Catatonic Death Reaction: Report of Case. P. Milici, Kings Park, N. Y.—p. 38.
Some Shakespearean Characters in Light of Present Day Psychologies. I. S. Wile, New York.—p. 62.
*Alzheimer's Disease: Its Incidence and Recognition. W. H. English, Rochester, N. Y.—p. 91.
Problems of Cancer Therapy in State Hospital. J. Moore, Queens Village, N. Y.—p. 107.
Validity of Shipley-Hartford Retreat Test for "Deterioration." B. Pollack, Rochester, N. Y.—p. 119.
Juvenile Amaurotic Idiocy. G. A. Jervis, L. Roizin and W. H. English, Rochester, N. Y.—p. 132.
Family Care Placement of State Hospital Patients as Method of Situational Therapy. Katharina Stuber and Henrietta B. De Witt, Sykesville, Md.—p. 144.
Echo of Reading: Impersonal Projection in Schizophrenia. Marjorie C. Meehan, Newtown, Conn.—p. 156.
Ambulatory Insulin Therapy: Report of Fifty-Two Cases. P. J. Tomlinson and Lucy D. Ozarin, Helmuth, N. Y.—p. 167.
Varicella with Encephalitis. S. C. Karlan, Dannemora, N. Y.—p. 174.
Incidence of Psychoses and Other Mental Abnormalities in Families of Recovered and Deteriorated Schizophrenic Patients. O. Kant, Worcester, Mass.—p. 176.

Alzheimer's Disease.—English presents evidence that supports his belief that Alzheimer's disease is more prevalent than is generally believed. The necropsy statistics at the Rochester State Hospital show about a 1.5 per cent incidence. Since 1935, 7 typical cases have come to necropsy. In another case a clinical diagnosis was made but permission for necropsy was not obtained. At the Rochester State Hospital at present there are 4 patients with the diagnosis of Alzheimer's disease. Inquiry into its incidence in other New York state hospitals for 1935 to 1939 inclusive revealed that Alzheimer's disease was diagnosed in 29 patients on their first admission to a state hospital. Of the 29 patients, 19 have died; necropsy of 11 was permitted in 7 of whom the diagnosis has been confirmed. It appears that in roughly one third of the cases the diagnosis is erroneous, but when it is considered that in a certain number of cases the disease is not diagnosed the erroneous diagnoses tend to be compensated for.

Quarterly J. Studies on Alcohol, New Haven, Conn.

2:453-640 (Dec.) 1941

Acquired Tolerance to Ethyl Alcohol. H. W. Newman, San Francisco. —p. 453.
Some Cultural Factors in Etiology of Alcoholism. J. P. Shalloo, Philadelphia.—p. 464.
Effect of Alcohol on Mental Activity. D. Wechsler, New York.—p. 479.
Marchiafava's Disease. G. Lolli, New Haven, Conn.—p. 486.
Alcoholism and Use of Drugs: Review of 841 Cases Diagnosed "With Psychosis Due to Drugs and Other Exogenous Toxins" or "Without Psychosis, Drug Addiction." M. Moore, Alice F. Raymond and Mildred G. Gray, Boston.—p. 496.
Conditioned Reflex Therapy of Chronic Alcoholism: IV. Preliminary Report on Value of Reinforcement. W. L. Voegtlin, F. Lemere, W. R. Broz and P. O'Hollaren, Seattle.—p. 505.
Critical Survey of Various Chemical Methods for Determining Alcohol Content of Body Fluids and Tissues with Their Physiologic and Medicolegal Significance. W. W. Jetter, Boston.—p. 512.
Vitamin Deficiencies and Liver Cirrhosis in Alcoholism: Part VII. Cirrhosis of Liver. N. Jolliffe, New York, and E. M. Jellinek, New Haven, Conn.—p. 544.

Radiology, Syracuse, N. Y.

38:1-130 (Jan.) 1942

Patent Interauricular Septum Associated with Mitral Stenosis: Lutembacher's Syndrome. G. J. Baylin, Durham, N. C.—p. 1.
Clinical and Roentgen Manifestations of Carcinoma of Duodenum. M. Ritvo and F. L. Hewes, Boston.—p. 7.
Phytobezoar and Its Formation in Vitro. L. K. Chont, Oklahoma City. —p. 14.
Skull Laminagraphy. B. S. Epstein, Brooklyn.—p. 22.
Patellar Anomalies, Roentgenologic and Clinical Consideration. H. C. Jones and D. W. Hedrick, Detroit.—p. 30.
Abdominal Pregnancy. D. Mattingly and L. J. Menville, New Orleans. —p. 35.
Star Shaped Radiolucencies of Gallstones: Rare Roentgen Sign. Marie Ortmayer and Marie Connelly, Chicago.—p. 39.
Relation of Density of Cholecystographic Shadows of Gallbladder to Iodine Content. H. Jaffe and T. J. Wachowski, Chicago.—p. 43.
Roentgen Diagnosis of Space Occupying Lesions in Region of Head of Pancreas. R. A. Rendich, M. H. Poppel and A. M. Cove, Brooklyn.—p. 47.
Recovery Function of Irradiated Tissues: Theoretical and Experimental Study. A. Mutscheller, New York.—p. 53.
Comparative Isodose Charts for 200 Kv., 400 Kv. and 1,000 Kv. X-Rays. M. C. Reinhard and H. L. Goltz, Buffalo.—p. 74.
Stepless Voltage Controls for X-Ray Generators. A. H. Warner and R. H. Neil, Los Angeles.—p. 77.
Two Instruments for Measuring X-Ray Tube Voltage. M. M. D. Williams, Rochester, Minn.—p. 80.
Tube Ratings and Exposure. M. M. Schwarzschild, New York.—p. 84.

Texas State Journal of Medicine, Fort Worth

37:575-638 (Jan.) 1942

Use of Radioactive Elements in Biology and Medicine. W. J. Kerr, San Francisco.—p. 582.
*Early Degenerative Lesions of Pancreas. S. A. Wallace and C. T. Ashworth, Dallas.—p. 584.
Metastatic Tumors Involving Central Nervous System. H. Hartman and L. M. Heffer, San Antonio.—p. 587.
Acute Cervical Adenitis in Children. A. Seeds, Dallas.—p. 593.
Treatment of Wounds. T. H. Thomason, Fort Worth.—p. 597.
Disabling Injuries of Shoulder (Exclusive of Fracture and Dislocation). L. P. Good, Texarkana.—p. 600.
*Postpartum Psychoses. G. W. Day, Fort Worth.—p. 605.
Use of Middle Meatus in Antrum Lavage. J. C. Dickson, Houston. —p. 608.
Radical Mastoidectomy: Indications, Technic and Postoperative Management. J. D. Singleton, Dallas.—p. 612.
Specific Problems of Morbidity and Mortality in Texas Children. J. M. Coleman, Austin.—p. 615.

Early Degenerative Lesions of Pancreas.—Wallace and Ashworth state that a careful review of sections of the pancreas from 200 recent necropsies revealed many unsuspected lesions. Adipose tissue invasion, fibrosis, arteriosclerosis and arteriolar sclerosis were observed to increase in frequency with advancing age. The evidence suggests that arteriosclerotic atrophy is probably the most frequent cause of the first two unsuspected lesions. Dilatation of acini and ducts is frequently present but has no definite relation to age.

Postpartum Psychoses.—Day does not believe that the psychosis that develops during or soon after pregnancy is different from the psychosis that would develop in the person affected under any other circumstances. The psychosis developing during the pregnancy-puerperium period should receive the prompt and scientific diagnosis and treatment that the same psychosis would receive at other times. Every community ought to have a psychiatrist within consultation distance and every general hospital a psychiatric department equipped for the scientific treatment of acute psychosis.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

50:1-68 (Jan.) 1942

Problem of Human Infertility. C. F. Flahman, San Francisco.—p. 1.
Sterility as Affected by Endocrine Disturbances. W. M. Wilson, Portland, Ore.—p. 6.
Mechanical Factors Producing Sterility. P. A. Reynolds, Los Angeles. —p. 11.
Cancer of Body of Uterus. R. E. Watkins and D. R. Neilson, Portland, Ore.—p. 17.
Practical Significance of Cancer Research. L. A. Emge, San Francisco. —p. 32.
Recent Advances in Pathology of Ovarian Tumors. Margaret Schulze, San Francisco.—p. 37.
Dysparenuia. P. A. Glebe, San Francisco.—p. 43.
Hemangioma of Kidney. E. H. McLean and T. J. Mathews, Oregon City, Ore.—p. 47.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Heart Journal, London

3:205-268 (Oct.) 1941

Coarctation of Aorta: Collateral Circulation. C. Bramwell and A. M. Jones.—p. 205.
*Changes in Renal Function and Persistence of Murmur After Ligature of Patent Ductus Arteriosus. G. Bourne.—p. 228.
Inversion of T Waves in Lead 2 Caused by Variation in Position of Heart. P. D. White, F. L. Chamberlain and A. Graybiel.—p. 233.
Pulmonary Venous Return via Superior Vena Cava. J. E. O. Gillespie. —p. 241.
Chest Lead (CR_5) Electrocardiograms in Auricular Fibrillation. W. Evans.—p. 247.

Ligation of Ductus Arteriosus.—Bourne reports a case of patent ductus arteriosus in which ligation of the duct caused a definite increase in the diastolic pressure (associated with a decided impairment of renal function) and failed to cause the classic murmur to disappear. These two points should be further investigated, and the efficiency of the renal function of patients with the condition should be determined before and after operation.

British Journal of Ophthalmology, London

26:1-44 (Jan.) 1942

Syphilis in Ophthalmology. E. W. Assinder.—p. 1.
Chorioretinitis Juxtapapillaris (E. Jensen). R. G. Posthumus.—p. 23.

British Journal of Tuberculosis, London

35:125-162 (July-Oct.) 1941

Prevention of Tuberculosis in War Time. F. Heaf.—p. 127.
Some Thoughts on Problems and Paradoxes of Primary Tuberculosis. G. A. M. Hall.—p. 133.
Thrombosis of Superior Vena Cava and Pulmonary Veins. W. P. Cleland.—p. 141.
Observations on Complement Fixation Test in Tuberculosis. F. Klopstock.—p. 146.

British Medical Journal, London

2:837-864 (Dec. 13) 1941

Observations on Some Normal and Injurious Effects of Cold on Skin and Underlying Tissues: II. Chilblains and Allied Conditions. T. Lewis.—p. 837.
*Some Effects of Vitamins B and C on Senile Patients. W. Stephenson, C. Penton and V. Korenchevsky.—p. 839.
*Value of Blood Transfusion in Malignant Diphtheria. I. Pugh and O. S. Williams.—p. 844.
Sacroiliac Strain. J. Cyriax.—p. 847.
Congenital Arteriovenous Anastomosis. A. G. Watkins.—p. 849.

Effect of Vitamins B and C on Senile Patients.—Stephenson and his colleagues studied the effect of vitamins B and C on 15 old men and 25 old women. The study was carried on for a year and was controlled by giving 18 similar subjects dummy pellets of lactic sugar. The observation time was divided into five periods of eight or nine weeks, during which examinations and tests were performed repeatedly. The treatment periods were alternated with rest periods of ten to fourteen days. The post-treatment period lasted four to five months. The ages of the treated and control patients varied from 60 to 87. All the patients had some degree of senile dementia accompanied by the usual features of senility and/or those of aging. All were given a usual hospital diet not rich in vitamins. Treatment with the vitamins did not stop the biologically inevitable development of senility and did not affect the basic features of senility already present. However, the treatment prevented or improved, in some cases to a striking degree, certain senile features which could be considered pathologic, which appeared prematurely or in an extreme degree (e. g. muscular, cardiovascular and mental deterioration) or which do not seem to be inevitable in normal physiologic senility (e. g. dementia, insomnia, cutaneous rashes, itching and constipation). During the study improvement or disappearance (apparently not lasting) of some pathologic senile features was often observed, while a number of persons were not improved and in a few certain senile features developed during treatment. The results emphasize that the greatest care should be taken to prevent partial or latent vitamin deficiency, which not only may prevent certain vitamin deficiency diseases but may lengthen the approach to pathologic senility. About four months after the treatment was terminated considerable deterioration occurred; the improvement obtained during treatment disappeared and some new instances of deterioration appeared. In spite of the relapse in some persons, in others the improvement was maintained after therapy had been withdrawn.

Blood Transfusion for Malignant Diphtheria.—Pugh and Williams gave 20 consecutive patients with malignant diphtheria transfusions of 500 cc. of stored citrated blood. There were 2 deaths among the 20 given blood transfusion and 7 deaths among 20 similar control patients. Of the 2 patients who died in the test series, 1 was moribund on admission and died a few hours after transfusion and the other died during the sixth week from cardiac failure. In the control series 5 patients died of profound toxemia during the first week of illness and 2 from cardiac failure during the second week. Immediately after the transfusion of blood the apathetic and drowsy patient had a bright and keen appearance, and the nasal discharge, the periadenitis and the membrane cleared rapidly. Fourteen of the 18 patients in the test series had thirty-three complications, as compared to forty-four complications for the 13 control patients. Severe complications (cardiac irregularities, pharyngeal paralysis and peripheral neuritis) were more prominent among the latter. The average hospitalization time for the treated was ten weeks as against thirteen weeks for the control patients. The results appear to warrant further investigation.

Edinburgh Medical Journal

48:793-872 (Dec.) 1941

Surgical Organization in Air Raids. C. F. W. Illingworth.—p. 793.
Injuries from Projectiles. S. Smith.—p. 799.
Wound Infection and Accidental Wounds: Antiseptic Eras—Yesterday and Today. J. Fraser.—p. 818.
Gaucher's Disease: Report of Two Unrelated Cases. E. Emanuel. —p. 843.

Journal of Laryngology and Otology, London

56:337-376 (Oct.) 1941

Pentothal Sodium Anesthesia in Peroral Endoscopy. G. Young and H. H. Pinkerton.—p. 337.
Temporal Lobe Abscess: Two Cases with Recovery; Note on Two Stage "Kahn" Operation. N. Asherson.—p. 347.
Bleeding from External Auditory Meatus Following Fracture of Mandible. S. Suggit.—p. 364.
Fibroadenolipoma of Tonsil. L. C. Thomson.—p. 368.

Journal of Mental Science, London

88:1-274 (Jan.) 1942

*Hyperthyroic Catatonia: Schizophrenic Symptom Complex. R. E. Hemphill.—p. 1.
Prognostic Factors of Adolescent Psychoses. A. B. Carter.—p. 31.
Observations in Hypoglycemia: III. Cerebrospinal Fluid Sugar and Coma. W. Mayer-Gross and F. Berliner.—p. 82.
Treatment of Tuberculosis in Uncooperative Patients. A. Kennedy.— p. 89.
Electroencephalography in Cases of Mental Disorder. W. G. Walter. —p. 110.
Further Observations on Sodium Amytal Experiments. F. Reitmann. —p. 122.
Blood Amines. D. Richter and Margaret Lee.—p. 127.
Three Ganser States and Hamlet. E. S. Stern and W. H. Whiles. —p. 134.

Hyperthyrotic Catatonia.—Hemphill tried to determine the incidence of hyperthyroidism and its distribution among 2,096 male and 2,654 female patients with recognizable types of mental illness. There were 5 men and 54 women with goiter. Apart from toxic delirium, mania, depression and paranoid paraphrenia, hyperthyroidism was not a significant factor in the production of mental disease. There was no typical postoperative reaction. Simple or nontoxic goiter did not occur in any case of early schizophrenia. Hyperthyroidism in schizophrenia was infrequent and was associated with only a particular form of reaction: hyperthyroid catatonia. The clinical features of this disorder consist of varying schizophrenic symptoms with auditory hallucinations, an acute episode with visual hallucinations, distortion of the body image, inability to differentiate parts of the body and other evidences of instability of the boundaries of the ego. This phase is succeeded by catatonic stupor. In cases of severe hyperthyrotic catatonia the end result is dementia. Systematic determination of the anterior pituitary hormones may provide the key to the schizophrenic illnesses.

Lancet, London

2:719-750 (Dec. 13) 1941

Group of Head Injuries. J. E. A. O'Connell.—p. 719.
Clotting and Filtration of Citrated Plasma. M. Maizels.—p. 722.
Flexed Plaster Spica for Fractured Femoral Neck. W. A. Cochrane.—p. 726.
Acute Bacterial Endocarditis: Two Unusual Cases. E. A. Cockayne and T. N. P. Wilton.—p. 728.

Medical Journal of Australia, Sydney

2:583-606 (Nov. 22) 1941

Studies in Tuberculosis. R. Webster.—p. 583.
Active Immunization in Experimental Pertussis. E. A. North, G. Anderson and J. J. Graydon.—p. 589.
Instincts and the Herd. A. A. Abbie.—p. 615.
Failure of Treatment with Placenta, with Vitamin C and with "Prontosil" in Chronic Myeloid Leukemia. J. B. Thiersch.—p. 594.

2:607-634 (Nov. 29) 1941

Biologic Approach to Infectious Disease. F. M. Burnet.—p. 607.
Dosage Interval in Sulfapyridine Administration. R. Andrew.—p. 612.
Instincts and the Herd. A. A. Abbie.—p. 615.
Permanent Implantation of Gold Radon Seeds: Technic and Indications for Use of Method. H. J. Ham and L. S. Loewenthal.—p. 620.

Schweizerische medizinische Wochenschrift, Basel

71:1233-1356 (Oct. 25) 1941. Partial Index

Labhardt's Method of Management of Uterine Stump After Supravaginal Amputation. F. Amacker.—p. 1234.
Treatment of Eclampsia According to Stroganoff. E. Anderes.—p. 1235.
*Hypophysis and Lactation. W. Berblinger.—p. 1237.
*Radiotherapy of Cervical Cancer. M. Brouha.—p. 1240.
Acute Attack of Glaucoma and Weather. A. Brückner.—p. 1242.
Peroneal Paralysis as Unusual Indication for Cesarean Section. C. Brunner.—p. 1243.
Infiltration of Pelvic Sympathetic in Treatment of Certain Hypogastric Plexalgias, Particularly of Vulvar Pruritus. G. Cotte.—p. 1248.
Cure of Degenerative Lesions of Uterus of Rats with E Avitaminosis by Means of Tocopherol Acetate. V. Demole.—p. 1251.
Permeability of Placenta. R. Doerr.—p. 1253.
*Determination of Prothrombin Time with Human Milk. E. Freudenberg.—p. 1256.
Etiology of Hypovitaminoses in Pregnancy. H. Guggisberg.—p. 1265.
Endometrioses and Endometriomas of Rectosigmoid. C. Henschen.—p. 1271.
Labor in Overweight Women. T. Koller and C. M. Zoller.—p. 1296.
Diabetes and Pregnancy. R. Staehelin.—p. 1324.

Hypophysis and Lactation.—According to Berblinger the relation between prolactin, the lactogenic hormone of the anterior lobe of the hypophysis, and the other hormones of the anterior lobe of the hypophysis has not been clarified. It is possible that this relation is quantitative and that it depends on changes in the numerical ratio of the epithelial cells of the anterior pituitary. It has been established that the acidophilic epithelial cells produce the growth hormone and the basophilic cells the gonadotropic hormones. According to Bates and Schooley the acidophilic epithelial cells are also the source of prolactin, at least in animals. The author thinks that the main cells of the adenohypophysis and the pregnancy cells originating from them must have a special function and suggests that it is possible that the pregnancy cells are the source of prolactin. He is of the opinion that information about the site of prolactin formation can be obtained only in cases in which lactation has developed in the absence of pregnancy and birth and in the presence of certain hypophysial changes. Such cases are rare. The author cites the history of a woman aged 47 in whom lactation began in the absence of pregnancy, abortion or childbirth but in the presence of a hypophysial adenoma which consisted mainly of epithelial cells corresponding to pregnancy cells. The author likewise cites the occurrence of mammary secretion in female and male patients with acromegaly and of lactation in the presence of bilateral ovarian tumors and directs attention to hypophysial changes in some patients with malignant growths. A woman had been operated on for sarcoma and for extensive sarcomatous metastasis. It is suggested that the adenoma formation in the anterior pituitary had some connection with the tumor formation. If prolactin formation takes place in the hypertrophic main cells and in the pregnancy cells, the abnormal lactation can be explained, as well as the time of its onset (shortly before menstruation, when the corpus luteum was in regression; at this time the excess of prolactin can exert its effect). In rats with experimentally produced hypophysial tumors the mammary glands are found in the secretory phase when the tumors contain foci which resemble pregnancy cells. It is highly probable that the pregnancy cells are the site of production of prolactin.

Radiotherapy of Cervical Cancer.—Brouha points out that radium and roentgen therapy have largely replaced the radical surgical treatment of cervical cancer. He reports results obtained by irradiation in the cancer hospital of Liège. The treatment is decided on after a consultation between the radiologist and the clinician. Generally the patient with a cervical neoplasm is treated first by radium and later by transcutaneous, high voltage roentgen irradiation. Of 602 patients treated between 1925 and 1935, 171, or 28.25 per cent, survived more than five years. Of those in whom the lesion was in the first stage 51.3 per cent survived; of those with a lesion in the second stage 34.7 per cent and of those with a lesion in the third stage 14 per cent. This difference in the mortality according to the severity of the lesion is especially pronounced during the first year after the treatment. During the subsequent years the mortality is practically the same for all patients. When the patient has survived beyond the first year without a relapse, the prognosis is no longer influenced by the grade of the initial lesion. The five year survival rate of 28.25 per cent for the total number of cases may be classed with the better statistics. Unfortunately it seems stabilized, as is also the less satisfactory survival rate of 51.3 per cent for patients in whom the lesion was of the first grade. Radiotherapy is the treatment of choice for cancer which has extended beyond the cervix. In certain cases, particularly in those in which surgical intervention is no longer possible, the effects of irradiation sometimes border on the miraculous. Extensive lesions become cicatrized, pain ceases and the general condition improves. A small number of patients are cured, while others are able to lead an almost normal life for variable periods. Further progress must be hoped for from increasingly earlier diagnoses and from a sane rivalry between irradiation and surgical intervention. The former must become more penetrating and more selective; the risks of the latter must be reduced.

Determination of Prothrombin Time with Human Milk.—Freudenberg describes a method which had been outlined by Hauser in 1940. It follows the micromethod developed by Fiechter and by Kato on the basis of Quick's technic. Its only originality is in the fact that human milk is used instead of brain extracts as a source of thrombokinase. Since the measurement of the prothrombin, according to Quick's technic, presupposes constancy of the calcium content, the human milk must be decalcified. This is accomplished by the addition of sodium fluoride. The peroxidase of human milk, being destructive of thrombokinase, must also be removed. This is done by adding pyrrole, the peroxidase toxin. To 20 cc. of freshly obtained breast milk are added 14.7 mg. of sodium fluoride and 0.3 cc. of pyrrole. The milk is stored in the ice box but should not be frozen. The prothrombin time is determined according to the aforementioned micromethods with 0.1 cc. of oxalated blood, 0.1 cc. of human milk (prepared as stated) and 0.1 cc. of calcium chloride solution. The advantage of the use of milk over the use of brain extracts becomes evident when it is considered that the difficulty of keeping brain extract available has been one of the chief obstacles to the regular employment of the valuable determination of the prothrombin time.

71:1357-1408 (Nov. 1) 1941. Partial Index

Experiments on Cutaneous Allergy Against Simple Chemical Substances. K. Landsteiner.—p. 1359.
Question Whether Dissemination of Allergic Sensitization Is Reflex Process. G. Miescher.—p. 1360.
Analogous Factors in Etiology and Pathogenesis of Asthma and Rheumatism. W. Berger.—p. 1362.
*Practical and Theoretical Interest of Associated Immunizations. G. Ramon.—p. 1366.
*Associated Vaccination Against Smallpox and Diphtheria. T. Reh.—p. 1368.
*Culture of Ultravirus. P. Hauduroy.—p. 1369.
Immunizing Efficacy of Water Soluble Tubercle Bacilli Autolysates, Especially Grasset Endotoxin. C. Hallauer.—p. 1370.
*Postscarlatinal Immunity. E. Freudenberg.—p. 1371.
Pigeons and Barnyard Fowls as Possible Sources of Human Psittacosis or Ornithosis. K. F. Meyer.—p. 1377.

Combined Immunization.—According to Ramon the method of combined vaccinations has been practiced for fifteen years. It consists in the simultaneous development of two or several immunities by means of a mixture of different vaccines. This method rests on the principle of "substances that aid and stimulate immunity." According to it vegetable or mineral substances, such as tapioca, tannin, calcium chloride, alum and

aluminum hydroxide, when added to an antigen, are capable of increasing the specific immunity which that antigen can induce. When these substances were first introduced it appeared hardly possible to use some of them in human subjects, although they had produced good results in animals. It was for this reason that the antityphoparatyphoid vaccine was tried; this vaccine was to assume the role of tapioca. Thus the combined vaccines were realized. The practical application of combined vaccination has furnished numerous and irrefutable proofs that multivalent immunization can be effected by a mixture of several vaccines.

Combined Vaccination Against Smallpox and Diphtheria.—Combined administration of antivariola and antidiphtheria vaccines, according to Reh, has been made obligatory in Italy. The method has incontestable advantages over the individual administration of the two vaccines. Only two vaccinations are necessary for immunization against both smallpox and diphtheria. This constitutes a considerable simplification. The technic employed is as follows: at the first session vaccinal lymph is introduced into the arm (in boys) or leg (in girls), and this is followed by the injection of 1 cc. of diphtheria toxoid into the opposite suprascapular region. Three weeks later the antivariola vaccination is controlled and at the same time a second injection of diphtheria toxoid (2 cc.) is given. After another three weeks the antidiphtheritic immunity is controlled by skin reaction. Complications did not develop in any of the 19 children vaccinated during the double vaccination. The antidiphtheria immunizing power was tested on 14 of the 19 children and proved 100 per cent successful. The antivariola immunity resulting from combined vaccination was tested on rabbits by Sobernheim's method. It was found that the group of animals vaccinated against diphtheria reacted to the solutions of lymph slightly more than the nonvaccinated rabbits. The author regards the combined vaccination against smallpox and diphtheria as a distinct advancement.

Culture of Ultravirus.—Hauduroy points out that for a long time it was accepted that ultravirus cannot be cultured, its growth having failed in numerous mediums. This failure of growth was due to disregard of an essential law of the physiology of ultravirus. Rabic, poliomyelitic and vaccinal virus will not grow in gelose, bouillon or synthetic mediums, no matter how rich. Ultravirus develops only in the presence of living matter; it is biotropic and possesses an essential, exclusive and imperative affinity for living matter. Without such matter it can neither survive nor develop. Vaccinal virus may be developed by inoculation of a heifer's flank and rabic virus by inoculation of the medulla of a rabbit. The author reviews attempts to culture ultravirus in symbiosis with tissue cultures. The characteristic designated as biotropism is so imperative that it dominates not only the technic of culture but all the affinities of ultravirus. The living cell is necessary for their development, and the more intense the life processes of the cell, the more intense is the development of the virus. It has greatest affinity for cells undergoing multiplication. The culture of ultravirus is now possible.

Immunity After Scarlet Fever.—Freudenberg investigated the frequency of secondary attacks of scarlet fever in the same person, the negativity of the Dick test after scarlet fever and the blanching phenomenon of the serum at the end of the disease. He defines as a secondary attack one occurring after an interval of more than three months. The establishment of this interval is important because relapses may occur during the primary attack. He cites reports on the incidence of secondary attacks of scarlet fever and states that in his own material of 1,200 cases there were 19 such attacks. The interval between the first and second attack varied from five months to seven years. Mostly children less than 6 years of age had a second attack. The Dick test was made on 303 convalescent patients with scarlet fever at the end of the sixth week, and 47 per cent were found to be positive. Classification of these patients according to age levels disclosed that positivity predominates among the young children and that only in children over 10 years of age does negativity reach 75 per cent. The blood serum of the majority of those with a positive Dick reaction did not produce the Schultz-Charlton (blanching) phenomenon, whereas the serum of the majority of those with a negative Dick reaction (6 of 10) did produce the blanching phenomenon. The serum of none of the children less than 6 years of age manifested the blanching phenomenon at the end of the sixth week of the attack of scarlet fever. The author concludes that in children of less than 10 years of age it is unjustified to regard scarlet fever immunity as certain six weeks after the attack. He believes that this immunity is generally overestimated.

Rivista di Malariologia, Rome

20:229-300 (July-Aug.) 1941. **Partial Index**

*Malarial Inoculation Through Sternal Bone Marrow. N. Quattrin.—p. 229.

Malarial Inoculation Through Sternal Bone Marrow.—Quattrin withdrew blood from patients artificially infected with tertian malarial parasites in the course of the fifth or sixth febrile attack and injected from 3 to 8 cc. of this blood into the sternal bone marrow in 9 cases. Samples of sternal blood were withdrawn at intervals during the first three hours after inoculation. The malarial parasitic forms disappeared rapidly from the sternal bone marrow in all cases but 3, in which scanty normal intraerythrocytic forms were found in the marrow within seventy minutes after inoculation. The reticuloendothelial cells and the protoplasm of the myeloid cells did not contain parasitic forms in any case. Malaria developed in 6 cases after an average incubation period of nine days. The prolonged incubation period in 6 cases and the lack of development of malaria in 3 cases were not related to the amount of blood injected, the number of parasites in the blood and the phase of cyclic evolution of the parasite. The author believes that the bone marrow has a particular effect on malarial parasites which prolongs the incubation period beyond that requisite after intravenous inoculation.

Anales de la Cátedra de Patología, Buenos Aires

2:1-220 (June) 1941. **Partial Index**

*Artificial Pneumothorax in Pulmonary Tuberculosis Complicating Asthma. R. F. Vaccarezza and R. Cucchiani Acevedo.—p. 67.

Artificial Pneumothorax in Pulmonary Tuberculosis and Asthma.—Vaccarezza and Cucchiani Acevedo made manometric determinations of intrapleural pressure and roentgen studies of the lung before, in the course of and after acute attacks of asthma in cases in which unilateral or bilateral artificial pneumothorax had been induced. Three cases are reported. In 2 cases of unilateral slightly hypertensive pneumothorax the manometric figures showed acute increase of intrapleural pressure during the attack. Administration of bronchial antispasmodic drugs failed to control the attack, which could be permanently controlled by removal of intrapleural air by pleural puncture. In the third case the pneumothorax was bilateral. It was slightly hypertensive in one lung and hypotensive in the other. The intrapleural pressure was not measured during the attack, but roentgen examination showed reexpansion of the lungs and opening up of the cavities. The acute attacks of asthma were controlled by administration of epinephrine. Immediately after control of the asthmatic attack roentgen examination of the lung was again performed. It revealed a greater collapse of the lung and diminution in the size of the cavity. Immediate discontinuance of pneumothorax resulted in a complete control of the asthmatic attacks. The author believes that bronchial expiratory obstruction which occurs in the course of acute attacks of asthma is the cause of acute expansion of the lung and increase in the intrapleural pressure. In asthmatic tuberculous patients the cavities offer great resistance to closure by pneumothorax. This makes it necessary to reach a pressure equivalent to or slightly higher than the atmospheric pressure.

Brasil-Medico, Rio de Janeiro

55:733-746 (Nov. 1) 1941. **Partial Index**

*Intrapleural Pneumonolysis in Prevention of Tuberculous Bilateralization. R. Pardellas and J. Carvalho Ferreira.—p. 733.

Intrapleural Pneumonolysis in Prevention of Tuberculous Bilateralization.—Pardellas and Carvalho Ferreira subjected to pleuroscopy a large group of patients with unilateral artificial pneumothorax for pulmonary tuberculosis. Those found to have adhesions were placed in one of two

groups. Patients in one group were treated by pneumonolysis after the second or third insufflation of air. Those in the second group were not thus treated. The improvement in the general condition of patients subjected to pneumonolysis was more evident than improvement in the group which did not have pneumonolysis. Immediate or late recurrence and bilateralization did not occur in patients of the first group, whereas it did occur in several patients of the second group. The authors emphasize the importance of pleurolysis as a routine when adhesions develop after unilateral pneumothorax. The facts that the condition of the patient is apparently good after the establishment of pneumothorax, that the adhesions are not visible on roentgen examination and that the sputum has become negative for tubercle bacilli are no argument against the performance of pneumonolysis. The authors observed in their municipal tuberculosis department that a large number of patients had bilateral pneumothorax during 1938, 1939 and 1940. The performance of pneumonolysis as a routine was established and has been practiced in the department since 1940. Early pneumonolysis stimulates defense reaction of the body and a specific reactivn of the normal lung through which the resistance of the organ increases.

Hospital, Rio de Janeiro

21:1-150 (Jan.) 1942. **Partial Index**

*Vitamin C: Effects on Diuresis. R. João Marques and R. Ribeiro. —p. 119.
Dielectrolytic Administration of Vitamin B_1 in Neuropathic and Myopathic Syndromes. S. Brown.—p. 131.

Effect of Vitamin C on Diuresis.—João Marques and Ribeiro administered vitamin C to patients with moderate insufficiency of the liver and to patients with atrophic cirrhosis, edema and ascites. Acute oliguria, which was present in all cases, was controlled by administration of vitamin C. The preparation used contained natural and synthetic vitamin C in equal amounts. It was administered for a week by intramuscular injection in daily doses of 5,000 units. Some patients were given a second week of treatment with daily doses of 2,000 units. In all cases the elimination of urine was greatly increased. The patients were discharged without edema and ascites and with normal elimination of urine. Four cases are reported. The author believes that vitamin C improves hepatic function with consequent improvement in the water metabolism and in the functions of the capillaries and of the kidneys.

Revista Clínica de S. Paulo, São Paulo

10:107-144 (Oct.) 1941. **Partial Index**

*Therapy of Cretinism. L. DeCourt.—p. 125.

Therapy of Cretinism.—DeCourt states that the main factors in the successful therapy of cretinism are early diagnosis and adequate thyroid therapy. The daily dose varies from 0.0065 to 0.048 Gm. of thyroid for infants, from 0.032 to 0.097 Gm. for children aged 2 to 4 years and from 0.065 to 0.191 Gm. for children from 4 to 12 years of age. The treatment should be administered without interruption all through the life of the patient.

Geneeskundig Tijdschr. v. Nederl.-Indië, Batavia

81:2329-2376 (Nov. 4) 1941. **Partial Index**

Chlasma, with Discussion of Theoretical Foundations of Vitamin C Therapy: Two Cases. P. H. J. Lampe.—p. 2342.
*Experience with New Method (Massive Arsenotherapy by Intravenous Drip) in Treatment of Syphilis. J. Bryan.—p. 2350.
Erythema Infectiosum, or Fifth Disease. D. P. R. Keizer.—p. 2368.

New Method in Treatment of Syphilis.—Bryan calls attention to the intravenous drip method of massive arsenotherapy first employed by Hyman of New York and Tzanck of Paris. In the last two and a half years Bryan used this method in 32 cases. He administered daily by intravenous drip 1.5 Gm. of neoarsphenamine diluted in 300 cc. of physiologic solution of sodium chloride. The procedure is repeated three days in succession until a total of 4.5 Gm. of neoarsphenamine has been given. The short duration is the chief advantage of this method, because it enables the patient to regard treatment as a sort of operation instead of being obliged to return regularly for injections over long periods. The method involves certain dangers. In 4 patients (12.5 per cent) the renal function became seriously impaired, but the disorder cleared up in a short time and no permanent injury of the kidney resulted. In 3 patients (11 per cent) mild peripheral neuritis developed. The author, unlike other observers, encountered no instances of cutaneous disease following massive arsenotherapy. Although more time will have to elapse before final evaluation is possible, the author is favorably impressed with the method and suggests that in a modified form it might become the method of choice for the treatment of early syphilis.

81:2377-2476 (Nov. 11) 1941. **Partial Index**

*Significance of Pregnancy Reactions According to Aschheim-Zondek and Friedman in Diagnosis of Hydatid Mole and Chorioepithelioma. R. E. J. Ten Seldam.—p. 2378.
Malignant Tumors of Intestine. S. Tjokronegoro.—p. 2394.
Further Experiences with Aspiration Punctures in Histologic Diagnosis of Tumors. H. Möller.—p. 2421.
Roentgen Treatment of Cutaneous Carcinomas. G. J. Staverman.—p. 2434.
Roentgen Diagnosis of Malignant Pulmonary Tumors. W. Z. Johannes. —p. 2442.
Histologic Peculiarities of Carcinoma of Tongue. G. Bras.—p. 2465.

Pregnancy Reactions in Diagnosis of Hydatid Mole and Chorioepithelioma.—Ten Seldam reports his experiences with Aschheim-Zondek and Friedman reactions during five years, in which eight hundred tests were made. Of this number one hundred and sixty-two were made because of suspected mole, of suspected malignant degeneration of a mole, as control after birth of a mole or after uterine extirpation for chorioepithelioma. These one hundred and sixty-two tests were made on 109 patients, of whom 58 had molar pregnancy, 8 had chorioepithelioma and 43 had neither. The author concludes that the tests for gonadotropic substance in the urine of women represent a distinct diagnostic gain. However, too great importance should not be attached to a high level of the substance during the first months of pregnancy for the diagnosis of hydatid mole. Lower values than are customary for hydatid mole do not constitute an absolute sign against this diagnosis. Of greatest importance is the quantitative reaction as control following the birth of a mole. If the reaction remains strongly positive for a long time or if it increases in severity after an initial reduction or a negative phase, it is strongly suggestive of chorioepithelioma, if a new pregnancy can be excluded. The test must be repeated at regular intervals until it becomes negative, and even after that it must be repeated at least once. The time necessary to produce a negative reaction is of less importance than the regular decrease in the intensity of the reaction. The reaction should be negative one month after the total extirpation. Absence of a negative reaction indicates metastasis. It is possible that at one time not enough chorionic tissue is present to make the reaction positive, but still enough for the development of chorioepithelioma. It is desirable to make the test also with spinal fluid in cases in which molar pregnancy or chorioepithelioma is suspected.

Ugeskrift for Læger, Copenhagen

103:1331-1356 (Oct. 16) 1941

*Treatment of Pneumonias in Childhood with One Single Large Dose of Sulfathiazole (Shock Dose), Illustrated by Seventy Cases. C. Friderichsen and P. Søbye.—p. 1331.
Sulfathiazole Rapid Treatment of Gonorrhea. P. Bonnevie.—p. 1342.
Pellagra: Case. M. Iversen.—p. 1343.
Deep Pressure Necrosis Caused by Ordinary Rubber Band: Case. J. V. Nielsen.—p. 1345.

Treatment of Pneumonia in Childhood with Single Large Dose of Sulfathiazole.—Friderichsen and Søbye state that in the treatment of pneumonia in children sulfathiazole is an exceedingly valuable agent, superior to sulfapyridine because of its rapid elimination and the few side effects. Of 129 children with pneumonia treated with sulfathiazole, 70 were given a single shock dose and 59 were treated with multiple doses for four days. The simpler administration of the large dose is as effective as the treatment with multiple doses, causes fewer secondary toxic effects and costs half as much as the continuous treatment. The shock dose of sulfathiazole given children weighing up to 13 Kg. was 0.3 Gm. per kilogram of body weight, while children weighing 20 Kg. received 0.2 Gm. and those weighing 30 Kg. received 0.14 Gm. per kilogram of body weight; the maximal dose was 4 to 5 Gm.

Book Notices

The Retina: The Anatomy and the Histology of the Retina in Man, Ape and Monkey, Including the Consideration of Visual Functions, the History of Physiological Optics and the Histological Laboratory Technique. By S. L. Polyak, M.D. A Fiftieth Anniversary Publication of the University of Chicago Press. Cloth. Price, $10. Pp. 607, with 100 illustrations. Chicago: University of Chicago Press, 1941.

The object set by the author in his book is "the elucidation of the complex structure of the retina: the identification of the types or varieties of neurons which compose it, and the understanding of their synaptical relationships . . . the modes of integration of the various nerve cells into a composite texture." Beginning nine years ago with examination of the monkey's retina by analytic methods, the author was led into a most extensive study of the retina of other animals, including man. Although his own investigation was undertaken from the point of view of neuroanatomy, any one who expects a dry and technical exposé of isolated histologic findings is due for a pleasant surprise in this book, for the author has included a history of conceptions of the visual processes through the ages and has arrived at some exceedingly stimulating ideas as to the relations of the various functions of the eye to the complex structures revealed by him and by other students in this field.

A technical section describes the various methods employed in study of the retina and the part played by each in the analysis of the retinal neurons. Since a study of the synapses occurring in the retina was of primary importance, stress is placed on the value of the supravital staining method of Ehrlich and the silver and gold impregnation method of Golgi with its modifications by Ramón y Cajal.

For his historical section the author has gone back to Greek and Latin sources and, with the aid of Max Meyerhof of Cairo, to the Arabic manuscripts. A number of diagrams of the visual apparatus, some not previously printed, are reproduced from these sources. The story of how our present knowledge of the visual apparatus has developed from the mass of misconceptions embodied in Greek and Arabic writings, of the bypaths and blind alleys on which early scholars were led to depart as a result of persistently erroneous authority and of how the results of technical progress, finally coming into the possession of a few men of genius such as Kepler, Müller and Ramón y Cajal culminated in our present conceptions of visual function, is a fascinating one. Briefly, the Greek ideas which placed the seat of vision in the crystalline lens were preserved and disseminated by Arab scholars and, after the darkness of the middle ages, were taken up by the first European writers, the link of continuity being the writings of the Moorish scholars in Spain. One of these Arabic scholars, Ibn Rushd, better known as Averroës, had in the twelfth century described, probably from an unknown Greek source, a conception of the image formed on the retina. It was not until 1583 that Platter of Basel offered a development of this idea, including the refraction of light rays by the dioptric media. He proved that the retina is the place where the visual image is formed. It remained for Kepler, however, in 1603 to calculate the effects of the refractive media and to provide exact formulas on which modern physiologic optics rests. Study of the retina was hampered by the belief that the photoreceptors must be on the vitreous surface, so it was not until 1853 that Müller proved the rods and cones to be the true photoreceptors. Study of the individual neurons in the retina first produced useful results in the hands of Ramón y Cajal and his pupils, but since his time little progress has been made until the work of the author.

His work, as shown by many finely reproduced illustrations in this book, included a careful study of the individual retinal neurons by analytic methods, with emphasis on the synaptic connections of the various units. The details of this work are too complex to be even touched on in a review. One comes out of it, however, with a conception of an integrated system of structures much more complex than would be obtained from presentations of the subject in textbooks of ophthalmology or anatomy. While more complex, it is also more complete and offers the possibility of explaining certain phenomena of vision in ways which were previously impossible. Without abandoning his role as neuroanatomist, the author has had the courage and imagination to follow his microscopic observations to conclusions concerning the part which the retinal structure may be supposed to play in the complex processes of vision. One of these is color vision. The author finds no evidence for the existence of separate types of cones which might be receptive to light of certain wavelengths. He believes that each cone is capable of response to all colors and suggests that analysis of this reaction produced in the cones may be carried out through the connections of each cone with bipolar cells of different type. There are actually reasons for believing that the midget bipolar cells may be especially sensitive to the reaction induced in a cone by light of long wavelength.

The monosynaptic midget bipolar cells and the midget ganglion cells are seen to have a one to one connection with the cones, especially with the specialized thin cones found in the foveal region. These connections form a "pure, or private, cone system" which seems to represent "the instrument for the most delicate spatial analysis or discrimination of the visual stimuli." By connections with other polysynaptic or diffuse bipolar cells, however, and through them with several ganglion cells of various types, impressions from larger or smaller areas of the retina may reach the central nervous system. By synapses of various types "gateways" of varying permeability are formed, by which it is conceivable that weaker stimuli, for example, may reach only certain types of bipolars and produce a specific response in them only when a number of photoreceptors are stimulated, hence mediating coarser impressions of larger objects. The system of intraretinal association neurons represented by the horizontal and possibly some of the amacrine cells may function in some way so as to lower or increase the threshold of the photoreceptors.

These are only a few of the ideas which are to be found in Dr. Polyak's book. Further studies have led him to a consideration of the higher visual pathways. These are briefly summarized in this book and will form the subject of another volume. In format and in reproduction of illustrations the book is up to the highest standards.

Science and Sanity. An Introduction to Non-Aristotelian Systems and General Semantics. By Alfred Korzybski, Director Institute of General Semantics, Chicago. With supplementary introduction and bibliography. The International Non-Aristotelian Library Publishing Company. Second edition. Paper. Price, $6. Pp. 798, with illustrations. Lancaster, Pennsylvania & New York: Science Press Printing Company, Distributors, 1941.

Language in Action. By S. I. Hayakawa, Assistant Professor of English, Illinois Institute of Technology, Chicago. Cloth. Price, $2. Pp. 245. New York: Harcourt, Brace & Company, 1941.

Language Habits in Human Affairs: An Introduction to General Semantics. By Irving J. Lee, Ph.D. With a foreword by Alfred Korzybski. Cloth. Price, $1.75. Pp. 278, with illustrations. New York & London: Harper & Brothers, 1941.

1. This volume, from the Institute of General Semantics, is obviously the basis of many of the current writings in semantics which have attracted such large public audiences. The average reader would do well to consult such works as those of Stuart Chase on "The Tyranny of Words" and Hayakawa on "Language in Action" as an introduction to this more profound contribution. As Stuart Chase has said, "Korzybski has spent ten years on the book, raiding nearly every branch of science, from neurology to the quantum theory, in a stubborn attempt to find how words behave, and why meaning is so often frustrated." The author, who is both a mathematician and an engineer, has endeavored to synthesize human knowledge in various sciences with a view to making all knowledge more understandable. The author finds in his study of semantics an approach to psychosemantic disorders.

2. It might seem strange to have a book on the proper use of English written by a Japanese, but this book has the special value of simplicity in its approach to the subject, giving to words a significance such as they do not have until one is fully informed of their meanings.

3. In these times, when the deliberate misuse of language is an art and when people need more and more to be able to comprehend everything that is said, such books as these are veritable

guide books to human understanding. The book by Lee contains some excellent line drawings, and each of the chapters is supplemented with hints for further study on the use of language in human affairs.

Help Your Doctor to Help You When You Have Food Allergy. Dr. Walter C. Alvarez, Editor-in-Chief. Cloth. Price, 95 cents. Pp. 50. New York & London: Harper & Brothers, 1941.

Help Your Doctor to Help You When You Have Sick Headache or Migraine. Dr. Walter C. Alvarez, Editor-in-Chief. Cloth. Price, 95 cents. Pp. 37. New York & London: Harper & Brothers, 1941.

Help Your Doctor to Help You When You Have Colitis. Dr. Walter C. Alvarez, Editor-in-Chief. Cloth. Price, 95 cents. Pp. 30. New York & London: Harper & Brothers, 1941.

Help Your Doctor to Help You When You Have Gastric or Duodenal Ulcer. Dr. Walter C. Alvarez, Editor-in-Chief. Cloth. Price, 95 cents. Pp. 53, with 3 illustrations. New York & London: Harper & Brothers, 1941.

Help Your Doctor to Help You When You Have Gallstones and Disease of the Gallbladder. Dr. Walter C. Alvarez, Editor-in-Chief. Cloth. Price, 95 cents. Pp. 41, with 5 illustrations. New York & London: Harper & Brothers, 1941.

These books are the first of a series written to supply answers to the questions which enter the minds of sick persons concerning their ailments. A patient with accurate and up-to-date information concerning his disorder should cooperate more intelligently with the physician. The material presented in the books is scientifically accurate, as it must be when prepared by authorities of such ability in their various fields of medical practice. The presentation is clear and simple enough to permit of complete understanding by the average person.

Essentials of Prescription Writing. By Cary Eggleston, M.D., Associate Professor of Clinical Medicine, Cornell University Medical College, New York. Seventh edition. Cloth. Price, $1.50. Pp. 155. Philadelphia & London: W. B. Saunders Company, 1942.

One of the severest critics of any publication is time. That "Essentials of Prescription Writing" is in its seventh edition is an excellent indication of the usefulness of this little book. It began as an accumulation of a series of notes which were published in book form in 1913. As the author points out, the nature of the book precludes radical changes in this edition; nevertheless, revisions are evident. For those not familiar with the book, its purpose is best described by the author's brief statement "This small volume is intended to provide the student of medicine with a succinct yet sufficient treatment of the subject of 'prescription writing.'" It does just that. There are eleven chapters: introduction, Latin grammar, grammatical construction of prescriptions, weights and measures, the practical writing of prescriptions, doses of drugs, vehicles, incompatibility, modes of administration of medical agents, suggestions for prescribing official preparations and practice prescriptions. As in previous editions, these chapters are presented in a flowing but concise style with a minimum of verbiage. This is a handy pocket size book that is an addition to the library of any medical student, physician or pharmacist or, for that matter, to the library of any one who is actively interested in prescribing, compounding or promulgating drugs. It is gratifying to note the acknowledgment given to Dr. Robert Hatcher for "inspiration and encouragement." Dr. Hatcher has provided this for many of our present critical investigators.

Prevention of Malocclusion. By Paul Guy Spencer, D.D.S. Cloth. Price, $5. Pp. 254, with 217 illustrations. St. Louis: C. V. Mosby Company, 1941.

By the statements of the preface, this is intended as a textbook for dental students and as a guide for practitioners. A glance at the table of contents shows that twelve of the eighteen chapters are related to treatment rather than to prevention. Diet, internal secretion and inheritance are covered in nine pages. Many years ago Dr. E. H. Angle and other investigators pointed out that many, if not most, malocclusions have their beginning in simple conditions from which most complicated ones may develop. Attention to these conditions at the beginning may result in normal development. This is the fundamental thesis of value in the book, but it is not as clearly or as well developed as it was forty or fifty years ago. The book contains many excellent observations. With a great many of the views expressed, however, the reviewer finds himself in violent disagreement. The title is ill chosen, for the work is rather a superficial manual on the treatment of malocclusion than a textbook on prevention. It seems intended to encourage the general practitioner and the student to attempt orthodontic management without adequate knowledge and training. Although the text contains much fine material, it is not well organized and does not display clear thinking. The illustrations, especially the pictures of dental models, are poor, and in general the technic is antiquated and obsolete. It is not well adapted to use as a college textbook or to the needs of the general practitioner who aims to give his patient the best service. There is no justification for the attitude that only persons endowed with special gifts and training are capable of practicing a special field in their general practice, but they should not be encouraged to offer special service unless they are willing to acquire the knowledge and technic necessary for its execution.

Our Climate. Useful Information Regarding the Climate Between the Rocky Mountains and the Atlantic Coast, with Special Reference to Maryland and Delaware. Prepared by John R. Weeks. Issued by the Maryland State Weather Service. Edward B. Mathews, Director. In Cooperation with the United States Weather Bureau. Francis W. Reichelderfer, Chief. Sixth edition, revised. Paper. Pp. 66, with illustrations. Baltimore, 1939.

Claiming that the climate of Maryland and Delaware is one of the best in the United States, this little book proceeds to paint a rosy picture of the natural advantages of this region. It is admitted that the summers are warm, but it is claimed that cool spells usually come to temper this warmth. No mention is made of the really depressive heat which prevails when these cool spells fail to come. The book has practically no bearing on health or disease, as the climate of Maryland and Delaware has no known health advantages that would recommend it to sick persons seeking a more healthful place of abode.

The 1941 Year Book of Public Health. Edited by J. C. Geiger, M.D., Dr.P.H., Director of Public Health, City and County of San Francisco. Cloth. Price, $3. Pp. 544, with 20 illustrations. Chicago: Year Book Publishers, Incorporated, 1941.

The second of the Year Book series on public health provides excellent and useful material for physicians and public health workers, whether they are administrators, field workers or epidemiologists. The most valuable articles selected from the leading professional journals both here and abroad have been carefully abstracted, and the editorial comments aid materially in evaluating the points of view expressed in many of the original papers. The practicing physician will find many articles abstracted which he may not have encountered in his usual reading. At present, when public health is in the forefront of the physician's mind, this book has particular importance.

Aguas curativas y lugares de recreo de México. Por el Dr. Harry Petters. Paper. Pp. 130, with illustrations. Mexico, D. F.: Editorial Orbis, 1941.

Balneoterapia crenoterapia: indicaciones y contraindicaciones. Por el Dr. Harry Petters. Paper. Pp. 50. Mexico, 1941.

These two publications make available general information concerning the various mineral resorts and so-called curative springs in Mexico. The publications include also the usual commercial announcements of some of these resorts and their products. Similar publications are available for other countries, but as far as we know nothing similar or even slightly comprehensive has been prepared for the United States. Perhaps the new Committee on American Health Resorts of the American Medical Association will be able to develop a publication of this kind with authoritative scientific statements. .

Common Skin Diseases. By A. C. Roxburgh, M.A., M.D., B.Ch., Physician in charge of the Skin Department, St. Bartholomew's Hospital, London. Sixth edition. Cloth. Price, 16s. Pp. 436, with 187 illustrations. London: H. K. Lewis & Co., Ltd., 1941.

This continues the excellence of the previous editions. The author has endeavored to bring the book up to date by adding sections on thorium X dermatomyositis and has expanded the chapter on avitaminoses. The book is exceedingly well written and well balanced with a useful chapter presenting an index of preliminary diagnosis for students.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

THROMBOPHLEBITIS, PUERPERAL SEPSIS AND PULMONARY EMBOLISM

To the *Editor*:—What differentiation can be made between thrombophlebitis and puerperal sepsis when pulmonary embolism occurs as a postpartum complication? Can thrombophlebitis occur without bacterial invasion of the blood stream? Would four or more negative blood cultures and negative cultures of the vaginal secretions be considered sufficient evidence to rule out bacteremia? Would the use of heparin interfere with the localization and resolution of small pulmonary emboli in cases of thrombophlebitis with pulmonary embolism?

Stiles D. Ezell, M.D., Middletown, N. Y.

ANSWER.—Puerperal sepsis is a broad term under which are grouped all the infections of the reproductive tract which occur in the puerperal woman. Thrombophlebitis is one manifestation of this complication. The veins of the placental site may contain septic thrombi which may gradually extend to involve the pelvic veins. These thrombi provide emboli which may be transported to distant foci. Most often pulmonary emboli arise from thrombi in the uterine or ovarian veins. The episodes of chills and fever which characterize the septic course of thrombophlebitis are the result of showers of bacteria in the form of small emboli which invade the systemic circulation. Bacteremia is usually present in thrombophlebitis. However, there may be few organisms in the blood at any one time. Thus a negative blood culture or several such cultures do not rule out thrombophlebitis.

The proper technic of blood culture will increase the incidence of positive results. The blood should be drawn during a chill or at the height of the fever. Fifteen or 20 cc. should be placed in nutrient broth and incubated for a week. If a growth appears it should be subcultured aerobically and anaerobically.

Thrombi in veins can occur without bacteremia, as is exemplified by thrombi in the lower extremities. These are the result of blood stasis and trauma to veins.

There is little information available on the use of heparin in puerperal thrombophlebitis. If heparinization is commenced early it is possible that thrombosis and subsequent embolic phenomena can be prevented. Apparently little can be accomplished by heparin after pulmonary embolism has developed. Heparin therapy should not interfere with the normal resolution of pulmonary infarction.

TREATMENT AND MARRIAGE IN LATE CONGENITAL SYPHILIS

To the *Editor*:—In the course of a routine hospital examination in 1936 a youth was found to have a 4 plus Wassermann reaction. The report of findings was given to the mother, who readily admitted that the father had syphilis. She submitted to a blood test and was also found to have a 4 plus Wassermann reaction. For four years the youth was given intensive treatment with neoarsphenamine, bismuth compounds and iodides. A recent blood test was 2 plus. The patient is feeling well with no objective or subjective signs of syphilis. He is now of age and contemplates marriage. In view of the blood findings should he marry? What advice should be given him? Should intensive treatment still be persisted in and, if so, how much longer?

M.D., California.

ANSWER.—From the evidence given it is presumed, although not definitely proved, that the youth in question has late congenital syphilis. Under these circumstances seroresistance in spite of prolonged antisyphilitic treatment is not unusual. Before permission to marry is given his spinal fluid should be examined, since the question of further treatment and, if so, of what type depends entirely on the character of the spinal fluid.

If the spinal fluid is normal the patient, having received four years of chemotherapeutic treatment, has now been adequately treated. The aim of treatment in such a situation is the prevention of outspoken clinical manifestations of disease. With the amount of treatment so far given there is about an 80 to 90 per cent assurance of indefinitely continuing good health, regardless of the serologic outcome in the blood.

If, on the other hand, the spinal fluid is abnormal, treatment should almost certainly be continued, though what kind of treatment should be given and over what period of time cannot be stated without knowledge of the spinal fluid findings.

As to marriage there can be no objection to this under either set of circumstances, provided the fiancée knows that the patient has congenital syphilis. There is no risk of infection to the wife from a husband with late congenital syphilis; and children, if any, will be normal if the mother is not infected.

The reason for insistence on informing the fiancée of the patient's condition lies entirely in the fact that possible subsequent progress or relapse, most likely in the form of interstitial keratitis or nerve deafness, cannot be absolutely guaranteed against. Should the fact of the husband's infection, even though congenital, be accidentally discovered by the wife after marriage rather than honestly discussed before, there is some risk of marital discord.

Neither in patients with congenital nor in those with acquired syphilis does permission to marry (which depends almost entirely on potential infectiousness and on no other factor) have anything to do with the blood test.

The issues raised regarding the treatment of late congenital syphilis and regarding the marriage of syphilitic patients are much more fully discussed in Moore's Modern Treatment of Syphilis, second edition, Springfield, Ill., Charles C. Thomas, 1941.

"SHIN SPLINTS"

To the *Editor*:—I should appreciate information on a condition known as "shin splints." After many years of physical inactivity due to a fracture of the semilunar cartilage sustained while playing college football I have recently been attending a Y. M. C. A. regularly in an attempt to get back in shape. I weigh 230 pounds (104 Kg.), about 40 pounds (18 Kg.) overweight. I have been playing "paddle ball," which is similar to four wall handball, possibly faster. I frequently have pain over the lower half of the tibia while playing, starting mildly but getting more severe as I continue to play. This is associated with a tired aching feeling in the thighs extending up to the hip. This lasts for about twenty minutes after I stop playing, after which a dull ache persists for hours, and the tibia is sensitive to percussion. A former track star at the Y mentioned that the syndrome was common in athletes, being known as "shin splints." Could you give me any information on the entity?

Paul T. Perugini, M.D., New Rochelle, N.Y.

ANSWER.—The term shin splints is used by athletes, especially track men. The condition is probably due to myositis of the tibial and toe extensor muscles. It may be tendonitis, myositis or myofascitis with an element of periostitis. It is usually due to multiple minimal traumas, such as occur in tapping against hard surfaces, such as a track, a cement floor or a hard wood floor in a gymnasium. It may be due to repeated sudden starts and stops.

In nearly every athletic pursuit one leg is subject to more shocks than the other. Is the condition unilateral or bilateral?

A roentgenogram of the tibia would rule out periostitis or any other lesion, including a neoplasm. Reduction of the weight is advised.

While at the University of Chicago, in charge of the medical supervision of athletic teams, Molander saw many such injuries, and in the majority of instances they were in track athletes. They also occurred in football and basketball players.

The early diagnosis of the condition is sometimes difficult. In the great majority of instances the athlete states that he has a dull aching pain over the anterior surface of the middle and lower thirds of the tibia and fibula and that he finds it hard to raise the heel from the floor without experiencing a sharp pain over the area described. Shin splints occur as a rule early in the season and in the majority of cases are caused by running on a hard board surface which produces a constant jarring. The patients are slow in recovering.

The most noticeable symptom is severe tenderness over the anterior surface of the lower and middle thirds of the tibia and fibula. This area feels hard and tense. Support by means of circular taping seems to give relief. Molander attributed this condition either to a tearing of the origin of the dorsiflexors of the foot or to a severe tendon strain. The former explanation seems the more plausible because of the persistent aching pain, which becomes intensified while one stands on the toes, and because of the long recovery period.

In treatment Molander employed a circular adhesive strapping and additional long strips of tape from the knee and around the ankle, keeping it at a right angle. After twenty-four hours the involved extremity is placed in the whirlpool bath at 105 or 110 F. for at least half an hour. Then the part is dried with infra-red radiation; the ankle is kept at all times at a right angle. Drying is followed with massage of the entire extremity, the tender areas being avoided. When tenderness has disappeared a graduated system of therapeutic exercises is used, getting the patient to an upright position for athletic work when function of the foot has returned to normal. This may take weeks or even several months.

The following description is quoted from Thorndike, Augustus: Athletic Injuries; Prevention, Diagnosis and Treatment, Philadelphia, Lea & Febiger, 1938.

Shin splints in track, cross country and other sports are a definite injury—a tearing of the origin of the tibialis posticus muscle from the tibia in its lower third. This is caused by running on a hard surface early in the season and continuous, constant jarring and is slow in recovery. Heat and massage with three-quarter circular strapping (squeezing the gastrocnemius around the posterior surface of the tibia) gives relief as long as the strapping is maintained. Rest, of course, is the adjunct most needed, and this should be continued long enough to permit the torn muscle attachment to heal.

PROBABLE DIABETIC COMA

To the Editor:—A white housewife aged 28 was seen at home in a severe coma. She was given 1 ampule each of caffeine and nikethamide and had regained consciousness on arrival at the hospital. The history was unreliable, but there was mention of diarrhea and vomiting for two to three days; the length of unconsciousness was unknown. There was no history of diabetes or drug addiction. The patient was able to answer questions, but the answers were so garbled that they defied interpretation. There was no odor on the breath. The pupils were widely dilated, and they dilated further in response to light. The chest was clear; the heart sounds were normal; the blood pressure was 110 systolic and 90 diastolic; the rectal temperature was 94 F. The abdominal and rectal examinations gave negative results. There were no neurologic abnormalities. A working diagnosis of shock due to some unknown toxin was made. Catheterized urine showed sugar 4 plus, albumin 4 plus and many red blood corpuscles; tests for acetone and diacetic acid gave negative results. Four hours after admission the temperature dropped to 93 F. A heat cradle was applied to the body. Examination of the eyegrounds gave negative results. The lumbar puncture showed normal pressure, clear fluid and no evidence of block; the Wassermann reaction of the spinal fluid was negative; the colloidal gold curve was 0000000000; the Pandy reaction was positive (1 plus); the fluid showed a trace of anthelmenia. The temperature reached 102 F., and the patient was still responding in incoherent speech. The white blood count at this time was 63,400, with 94 per cent polymorphonuclear leukocytes, 6 per cent lymphocytes and a shift to the left. The red blood count was 4,300,000 and the hemoglobin content 77 per cent. The blood sugar level was 490 and the nonprotein nitrogen 73 mg. per hundred cubic centimeters. The patient was given 500 cc. of whole blood, 2,000 cc. of Hartman's solution by hypodermoclysis and 150 units of regular insulin, plus heavy doses of the vitamins. She failed rapidly, however. Three catheterizations during the twenty-eight hour course had yielded 80 cc. of urine. At postmortem examination there were no positive findings. There was no evidence of fracture of the skull or injury to the brain. The heart and lungs were normal. The kidneys and liver showed no evidence of toxic damage. Can you suggest any toxin or drug which might have produced the clinical and laboratory effects mentioned and yet have shown no apparent trace of its virulence at autopsy?

Charles H. Pitegoff, M.D., New Haven, Conn.

Answer.—Positive diagnosis is not possible from the data available, but those furnished strongly suggest that diabetic coma was the cause of death. The patient was in coma with a low rectal temperature without signs of an organic cerebral lesion and showed glycosuria with evidence of failing renal function in the absence of postmortem evidence of renal disease. She showed albumin, a leukocyte count of 63,400 and a blood sugar content of 490 mg., with a nonprotein nitrogen level of 73 mg. per hundred cubic centimeters. It is regrettable that the blood plasma was not tested for acetone and its content of carbon dioxide determined. The absence of acetone and diacetic acid in the urine is most unusual in diabetic coma but has been known to occur in cases of renal block.

EFFECT OF TEMPERATURE OF INTRAVENOUS SOLUTION

To the Editor:—Because of the reaction from intravenous injections of dextrose in saline solution it has been decided to give the solution at room temperature. I should like to know if this is satisfactory after anesthesia and also if it has the effect of lowering the body temperature. In the past the solution for intravenous use has been warmed to body temperature.

M.D., California.

Answer.—Reactions in general and chills and fever in particular following the intravenous administration of dextrose in saline solution are due almost entirely to contamination of the solution or of the apparatus used for the administration. If concentrated (50 per cent) dextrose is administered intravenously rather rapidly, because of the high concentration a slight degree of vascular reaction may develop, but even this type of reaction occurs rarely. Although it is more physiologic to administer dextrose intravenously at body temperature, administration of the solution at room temperature should not make any essential difference as far as reactions are concerned. If the solution is administered slowly, the temperature of the room should not exert any appreciable influence in lowering the temperature of the patient's body.

LIFE EXPECTANCY AFTER SPLENECTOMY

To the Editor:—I am anxious to obtain information concerning the following: 1. Does splenectomy alter life expectancy when (a) the spleen is removed for traumatic rupture or (b) the spleen is removed because of idiopathic thrombocytopenic purpura or familial (congenital) hemolytic icterus? 2. If a person has had splenectomy because of traumatic rupture of the spleen and is otherwise normal, will insurance companies sell him life insurance in exactly the same manner as if the spleen had not been removed? I have in mind the question of the relation of the spleen to resistance, especially as concerns antibody formation. While it appears that most physicians feel that removal of the spleen is rapidly compensated for by hyperplasia of the other organs of the reticulo-endothelial system, I am unable to find in the literature definite experimental or statistical proof of this. I am assuming that the patient has fully recovered from the trauma and the operation, so that operative risk is not a factor.

M.D., Ohio.

Answer.—1. Removal of the spleen following traumatic rupture does not alter life expectancy, assuming that the patient has fully recovered from the effects of the trauma and operation and there are no postoperative complications. The same statement applies to splenectomy for idiopathic thrombocytopenic purpura and familial hemolytic icterus. In fact, life expectancy in these conditions may actually be increased, since splenectomy often prevents fatal complications for many years. Several patients now under observation were subjected to splenectomy fifteen to twenty years ago for these diseases and others, such as Gaucher's disease, and they show no deleterious effects attributable to the absence of a spleen. The various functions of this organ are taken over by other organs or tissues of the body. Resistance to various infections, for example, is just as high in these patients after splenectomy as before.

2. The practice of insurance companies with regard to life insurance following splenectomy for traumatic rupture is, in general, as follows: No insurance is issued during the first two years after operation. During the third and fourth years insurance is issued at rates slightly higher than standard. Five years after splenectomy, if there is no complicating disease, the person is insured at standard rates. Apparently during the first two years insurance companies believe there is still a risk of complications secondary to the trauma and operation. If the person is normal five years postoperatively his life expectancy is considered normal. Since the number of cases of splenectomy for traumatic rupture is relatively small, an accurate statistical evaluation of life expectancy is not available to insurance companies as yet. The few persons under observation have not differed in this respect from the general population.

STRABISMUS IN A YOUNG CHILD

To the Editor:—In Queries and Minor Notes in The Journal, Jan. 3, 1942, page 93, with reference to strabismus in a young child, your correspondent stated that the good eye should be occluded to exceed the use of the other eye to prevent amblyopia. You state that this is "important for several years." You further state that if due care is exercised along these lines," operation may be postponed indefinitely without the sight becoming impaired."

I wish to take exception to these statements. Binocular vision is developed during the first five or six years of life, and even if the visual acuity is maintained by covering first one eye and then the other (which is seldom done) binocularity has been lost to the patient by this form of treatment. By postponing the operation the patient loses the opportunity to develop binocularity and is encouraged to form vicious habits such as abnormal retinal correspondence or alternate suppression of one or the other eye.

The indication in this case is a definite diagnosis as to whether the case is concomitant or paralytic as suggested by the writer, an examination under atropine to determine the refractive condition and the use of glasses if needed.

If the case is paralytic, 3 to 5 drops of saturated solution of potassium iodide three times a day after eating should be given over a long period and the encouragement of the head position for the maintenance of binocular vision.

If the case is concomitant, patching of the good eye, use of glasses if needed, and early orthoptic training are indicated. After one year of this type of care, if the squint has not been relieved, operative procedures are indicated in order to give the child an opportunity to secure binocular vision in early life.

Oscar Wilkinson, M.D., Washington, D. C.

Note.—The letter was referred to the authority who prepared the reply. He writes:

To the Editor:—The statements to which the critic takes exception are well established. His advice as to treatment is for the most part routine. The writer of the question was not interested in routine ophthalmologic treatment. There is a difference of opinion about the best age at which to operate. A great majority of children are not operated on until they are between 8 and 12 years of age, and good results are obtained. A minority who are fond of operating advocate early operation. It has not been shown that their results are better. Reoperation is often necessary later. The critic's remark that postponing operation means giving up hope of "binocularity" is not borne out by the facts.